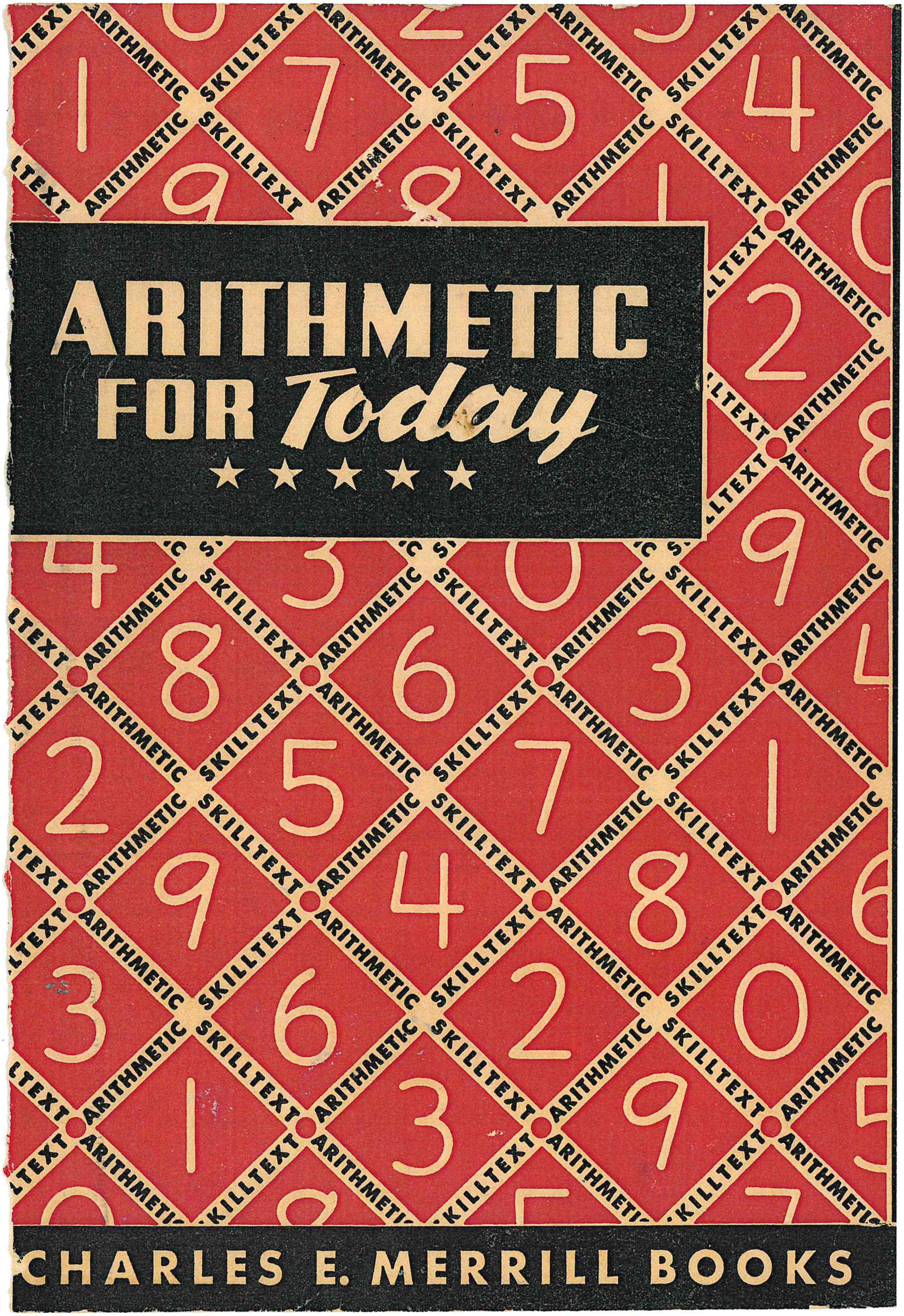

ARITHMETIC FOR *Today*

CHARLES E. MERRILL BOOKS

IMPORTANT: Eight pages of diagnostic tests are bound into the center of this book. Remove these tests befor the book is given to the pupils.

★ ★ ★ ★ ★ ARITHMETIC FOR TODAY ★ ★ ★ ★ ★

Arithmetic Is Part of Child Growth Arithmetic is an integral part of each child's development. Most pupils enter the fifth grade with a considerable background of number experiences and substantial mastery of a number of arithmetic skills and concepts.

Most of the pupils in your class have probably learned how to use the addition and subtraction facts in adding and subtracting numbers containing up to 4 or 5 figures. Through new experiences, they will recall or perhaps have to relearn some of these facts and skills with a more mature understanding of the number relationships involved.

They have also probably had all the multiplication and division facts and have applied them in multiplying by one and two-figure numbers and dividing by one-figure numbers, with remainders to bring down.

The Scope of the Year's Program Here again, the pupils will need to refresh their memories of division facts and skills on a more advanced level of understanding. They will extend their use of division into dividing by two-figure numbers. This is one of the principal sequential learnings of the year.

Pupils of this age have had many experiences with fractions. They have learned to work with fractional parts of measures and other numbers, they have used fractions in comparing numbers, they can recognize some fractional equivalents, and they have even begun to add and subtract with fractions. Now they are ready and able to organize these learnings; and another major sequential learning of the year is the addition and subtraction of fractions, with the introduction of functional multiplication of fractions and mixed numbers. Decimals, too, are introduced near the end of the year as another way of adding and subtracting tenths and hundredths.

As the pupils recall and extend their computational skills, they will continually apply these skills in solving problems within their experience. The chief emphasis in problem solving this year is on problems with two or more steps and on using mental arithmetic to work *quickies* without depending on pencils.

During the year, the pupils will increasingly need to use measures in their daily activities. As they solve problems involving the various units to measure time, length, weight, height, and liquid and dry capacity, they continue to organize their information and generalize about the relationships of the units, so that they can use measures more competently. New learnings are measuring perimeters and using graphs and scale drawings.

How To Use This Book

This book is a complete, modern arithmetic text. It will provide for your pupils, in carefully organized form, the kind of program described above. There is ample material in the book to meet the arithmetic needs of fifth-grade children.

Many common experiences of children are built into the book, but no textbook can, of course, include *all* the experiences and interests which are peculiar to every locality. In the Teacher's Manual, concrete suggestions are given for taking advantage of experiences in the local environment.

The Teacher's Manual The Teacher's Manual, which is bound into the Teacher's Edition of this book, gives specific suggestions for helping each child make effective use of each page of the book. The Guided Learning suggestions for each page include Step 1: preparation for using the book ("Before Using the Book"); Step 2: the actual use of the book ("Using the Book"); and Step 3: group and individual follow-up procedures ("After Using the Book").

Introduce New Topics to the Entire Group There are social as well as lear ing values in having children a tack a new topic or problem t gether. The thinking of one child stimulates the thinking the rest. For this reason, both the preparation for using th book (Step 1) and the actual use of the book (Step 2) shoul be carried out with the entire group, under teacher guidanc

The children can later work in smaller, flexible groups fo the follow-up procedures (Step 3) designed to meet individua needs for practice.

To understand arithmetic, children need a chance to think When a topic is introduced under your guidance, give th children an opportunity to apply what they already know Challenge them to discover for themselves how to make th new step.

Arithmetic Learnings Are Interdependent The Index on the inside back cove provides an alphabetical list of th principal topics treated in the tex However, an understanding of arithmetic must be achieve by definite sequential steps. Each new learning depends upo previous learnings. For example, two-figure division depend upon one-figure division; one-figure division is based on th division facts which are related to the multiplication facts mastery of division requires skills in both subtraction an multiplication and in understanding of place value in our number system. Thus, each step leads to the next. *For this reason it is important to follow the order of topics as presented in th book.*

Reading Difficulties Solved Initial success is a large factor in child's attitude toward arithmetic Each topic in this book starts wit easy work, and the manual supplies other simple material fo children who need more practice. No child, moreover, shoul fail in arithmetic because of reading difficulties. The readin vocabulary of this book is very simple, and new arithmeti terms are carefully introduced and explained. Some children however, may still be unable to understand all that they read This difficulty should be attacked like other reading problems

All directions should be read by the children under th guidance of the teacher. The pupils should read silently firs to find out what they are to do, or what process they ar to use, or what the approximate answer will be. They shoul then discuss with the group what has been read, telling wha unfamiliar words or other difficulties they have met.

Provision for All Levels of Ability This book is outstanding for the concrete and stimulating way in which i provides for *all* levels of arithmeti ability and interest. (1) For children who need it, the manua provides suggestions for additional practice. (2) For childre who are able to explore each arithmetic idea further, the boo itself contains 32 pages of specially planned "enrichment" material. These pages (121 through 152) are keyed by footnotes to appropriate pages throughout the text. They d not introduce new arithmetic concepts, but provide wide application of ideas already introduced, in ways that are o maximum child interest.

Cumulative Recall and Diagnostic Testing To help pupils use and maintain learnings, cumulative reviews o various kinds have been placed regularly throughout the book. (See "Recall and Maintenance" in the Index.) In addition, eight pages of "Check Tests" (inventory tests) have been bound into the middle o the book to help you and the children discover how much they have learned and to diagnose needs. *These eight pages of tests should be removed from the book at the beginning o the year.* They should be given to the children at the times indicated in the footnotes—after pages 28, 60, 88, and 120.

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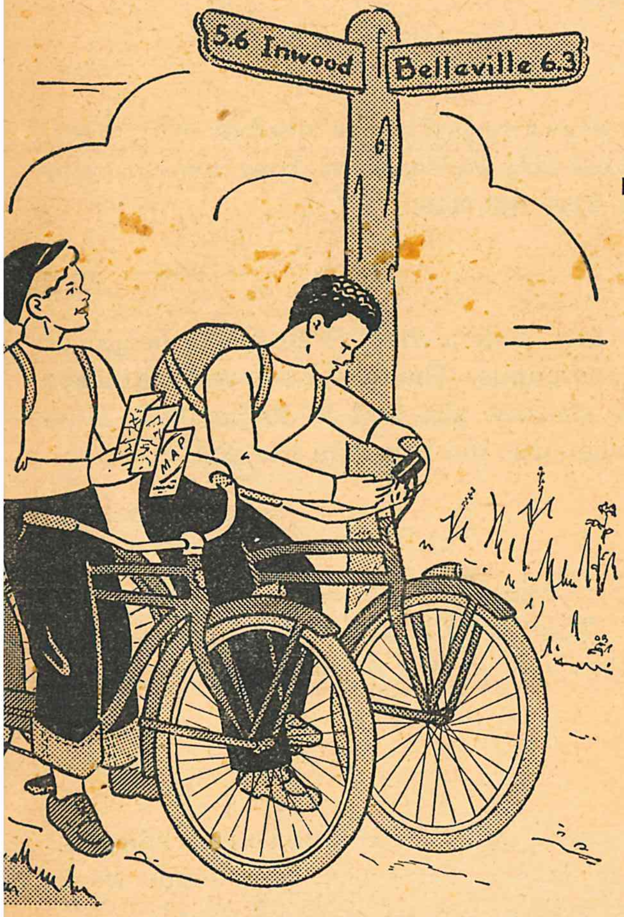
ARITHMETIC FOR *Today*



By

THOMAS J. DURELL
Formerly Assistant State Commissioner
of Education
In charge of Elementary Schools
Trenton, New Jersey

ADALINE P. HAGAMAN
State Helping Teacher
Somerset County, New Jersey

JAMES H. SMITH
Formerly Director, Training School
Oshkosh State College
Oshkosh, Wisconsin

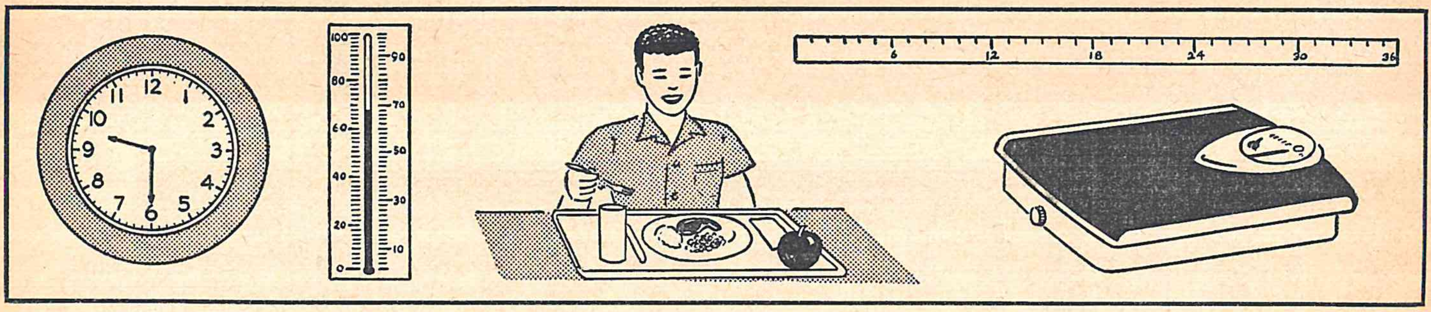
L. A. City School Districts
DODSON JUNIOR HIGH

11

CHARLES E. MERRILL BOOKS, Inc.
1300 Alum Creek Drive
COLUMBUS 16, OHIO

An
Arithmetic
Skilltext®

Using Arithmetic in School



You use arithmetic every day of your life. The pictures suggest some ways you use arithmetic in school. For a day or two, keep a record of all the times you use arithmetic in school.

The problems on this page tell how some school children used arithmetic. See whether you can work these problems as "quickies." Use your pencil only to write the answers in the blanks.

1. It takes Bill 15 minutes to walk to school each day. If school starts at 9:00 a.m., what is the latest that Bill can leave home and still be on time?

____

2. Bill's school lasts from 9 o'clock in the morning to 12 o'clock at noon, and from 1 o'clock in the afternoon to 3 o'clock. How many hours is he in school each day?

____

3. The temperature in a schoolroom should be kept as near 68° as possible. This afternoon the thermometer says 77°. How many degrees too warm is it?

____

4. Ann has 12 words in her spelling list that are giving her trouble. If she learns 3 of these words a day, how many days will it take her to learn them all?

____

5. Nora is reading a book for a report to the class. The book has 256 pages. She has read 145 pages. How many pages does she have left to read?

____

6. Jean paid 10¢ for a sandwich, 6¢ for some soup, 6¢ for some milk, and a nickel for an apple. How much did Jean's lunch cost?

____

7. Tom is helping to give out supplies. There are 32 boys and girls in the class. If each one gets 3 sheets of drawing paper, how many sheets will Tom need?

____

8. Tom kept a record of the weather in October. There were only 9 clear days. How many days in October were not clear?

____

9. The class made a chart to show the height of each of the pupils. The tallest boy was 60 inches tall; the shortest girl was 51 inches tall. How much taller was the boy than the girl?

____

10. The heaviest boy in the class weighed 92 pounds. The smallest girl weighed 63 pounds. How much heavier was the boy than the girl?

____

11. In October, the class counted on the calendar. It was 25 days to Halloween. How many weeks was this, with how many days left over?

________ weeks, ________ days

12. The class decided to have hot chocolate at the Halloween party. If one gallon is enough for 16 people, how many people will two gallons serve?

____

Adding Helps You Subtract

	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9	10
2	3	4	5	6					11
3	4	5	6						12
4	5	6							13
5	6								14
6							⑬		15
7									16
8									17
9									18

Have you ever used one of these "magic number tables"?

First, finish filling it out. You can see how this is done.

Then look at the 13 with the circle around it. Do you see how the 13 shows that 6 + 7 = 13, 7 + 6 = 13, 13 − 6 = 7, and 13 − 7 = 6?

1. Circle the number that shows 8 + 7.

Write the addition and subtraction facts that belong together.

2. 8 + 7 = ____ 7 + 8 = ____ 15 − 7 = ____ ____ − 8 = ____

3. 4 + 6 = ____ ____ + ____ = ____ 10 − ____ = ____ ____ − ____ = ____

4. 9 + 5 = ____ ____ + ____ = ____ 14 − ____ = ____ ____ − ____ = ____

5. 8 + 9 = ____ ____ + ____ = ____ ____ − ____ = ____ ____ − ____ = ____

Write the sums. Use the table if you need to. In **addition,** the answer is called the **sum.**

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*
6.	9	4	7	8	4	5	8	2	5	9	9
	3	4	9	5	7	5	6	9	8	1	9
7.	8	9	5	4	6	8	9	6	3	7	6
	8	6	6	9	6	4	7	1	9	7	8

Write the remainders. In **subtraction,** the answer is the **remainder** or the **difference.**

8.	11	16	10	18	9	11	14	15	14	13	17
	8	7	7	9	8	3	8	9	6	4	9
9.	13	13	15	11	17	12	11	13	16	10	14
	8	9	6	4	8	9	6	5	9	2	7

Can You Use the Addition Facts?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Look at the number table. When you add 6 to 28, do you see why the sum is 34, not 24?

Write the sums.

	a	*b*	*c*	*d*	*e*
1.	13 7	24 8	29 4	19 4	23 9
2.	35 6	38 8	56 9	42 8	68 9
3.	73 7	36 8	88 3	21 9	59 7

Add **down.** Check by adding **up.** Why should you get the same answer both ways?

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*
4.	7 5 8	5 3 7	4 5 2	4 8 6	9 6 1	3 4 8	8 2 7	7 1 5	4 3 6	8 1 8	6 4 5
5.	6 6 7 4 3	2 5 7 2 5	6 3 5 1 4	3 5 4 4 2	7 4 5 1 2	8 1 9 2 3	7 3 1 6 7	3 6 1 8 6	1 4 8 7 4	8 3 7 7 9	3 2 7 9 2

Can You Use the Subtraction Facts?

Look at the number table above. When you subtract 6 from 34, do you see why the remainder is 28?

1. 44 − 6 = ______ 64 − 6 = ______ 24 − 6 = ______ 84 − 6 = ______

When you subtract 6 from a number ending in 4, the answer ends in ______.

Subtract. Use the number table if you need it.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
2.	24 5	39 5	21 9	41 2	60 9	57 2	21 7	32 8
3.	52 6	40 3	78 7	62 4	81 5	90 5	30 8	42 3
4.	70 7	47 9	27 8	32 5	53 6	83 9	61 6	96 8

Do You Understand Carrying?

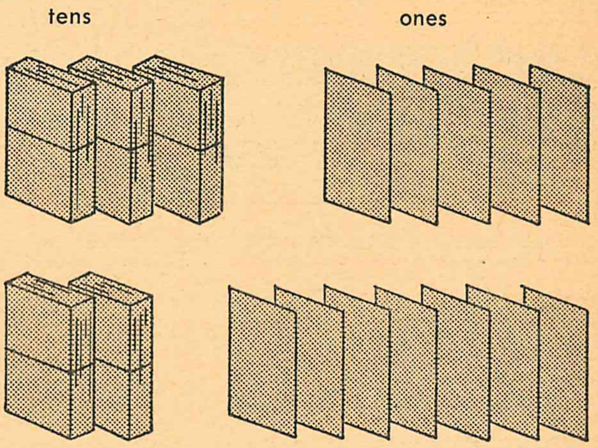
1. Sam and Bob helped take in tickets for the school play. They counted the tickets, putting 10 in each bundle. Sam took in the tickets shown at the top of the picture. Bob took in the tickets shown below.

Sam took in ______ tickets. Bob took in ______ tickets.

The boys put their tickets together. The ones made

______ bundle of tens, with ______ tickets over.

How many tickets did they have in all? ______



48
29
37

2. Add 48, 29, and 37. First add the ones column. How many **tens** do you carry to the tens column? ______

Now add the tens. How many **hundreds** do you carry to the hundreds column?

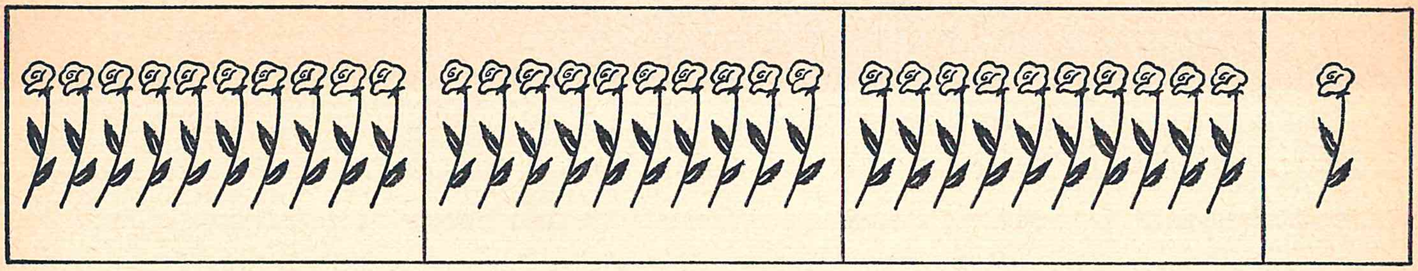
______

In your answer, there are ______ hundred, ______ ten, ______ ones.

Add down. Check by adding up.

	a	*b*	*c*	*d*	*e*	*f*	*g*
3.	57 49 23	13 61 26	99 73 35	47 64 86	54 54 79	89 62 75	39 95 95
4.	378 746	509 948	837 789	355 808	695 805	639 772	853 687
5.	472 283 525	698 630 653	812 419 493	359 563 204	314 689 103	239 757 868	255 334 201
6.	395 186 452	462 608 457	109 420 795	567 389 495	681 72 449	764 306 659	922 104 89
7.	276 197 358 230	429 969 617 786	138 375 985 476	877 369 548 631	739 924 799 964	239 976 688 898	419 743 579 877

Do You Understand Borrowing?



1. Jill picked 31 roses to sell. She put 10 roses in each bunch and had 1 rose left over.

Jill sold 12 roses. To find how many roses were left, cross out 12 roses. There was 1 bunch (10 roses) and ______ roses left. Jill had ______ roses left.

62
39

2. Our club wanted to sell 62 tickets for the school play. After we had sold 39 tickets, how many tickets did we still have to sell?

Start your subtraction in the ones column. Since you cannot subtract 9 from 2, you must borrow 1 ten from the 6 tens, to make 12 ones. Subtract 9 from 12. Then subtract 3 tens from 5 tens.

Our club had ______ tickets left to sell.

You can check your work by adding the number of tickets left to the number of tickets sold. You can do this without writing the numbers again. Is the sum 62? If not, find where you made your mistake.

Subtract and check.

	a	*b*	*c*	*d*	*e*	*f*	*g*
3.	43 16	63 24	56 43	42 26	63 35	38 21	47 34
4.	392 164	573 246	895 627	362 143	731 318	957 236	648 429
5.	718 653 65	827 562	326 283	948 456	629 257	847 294	736 452
6.	941 467 474	725 236	823 347	916 239	624 268	536 178	445 189
7.	324 289	559 482	467 78	644 477	721 533	333 146	811 424
8.	237 149	652 486	976 817	515 439	723 535	861 372	426 297

Measuring Time

1. Do you remember the units for measuring time? Fill the blanks below.

1 minute (min.) = ______ seconds

1 week (wk.) = ______ days

1 hour (hr.) = ______ minutes

1 year (yr.) = ______ months (mo.)

2. Write the unit of time you would use to measure:

a. The time to bake a cake ___minute___

b. Your age ______________

c. How long it takes to run a short race ______________

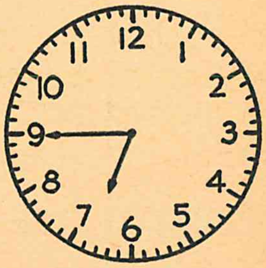
d. The length of your summer vacation ______________ or ______________

e. How long you work for pay ______________

f. An overnight train trip ______________

---

3. The clock at the right shows when Jean's favorite radio program starts.



It starts at ______:______ o'clock. Another way to say this is a quarter to ______.

4. Sue is baking muffins. She put them in the oven at 7:25. It takes muffins about 18 minutes to bake. When will Sue's muffins be done? ______

---

5. Bob ran a race in 51 seconds. Sam's time was one minute. How many seconds less than Sam did Bob take?

______

6. Last year, Nora's father gave her a book every two months. How many books did he give her during the year?

______

7. Jim's brother works from 9 a.m. to 5 p.m. He has an hour out for lunch. How many hours a day does he work?

______

8. Jean earns 5¢ a day for helping with the dishes. How much does she earn in a week?

______

9. It is 18 days to Bill's birthday. How many weeks is this? How many days left over?

______ weeks, ______ days

10. Yesterday Nancy practiced her piano lesson from 20 minutes after 4 o'clock to 10 minutes of 5. How many minutes did she practice?

______

11. Last summer, Ann spent 4 weeks in the country. How many days was she there?

______

12. Ann's father works 8 hours a day, five days a week. How many hours a week does he work?

______

13. Jerry goes to bed at 9:30 in the evening. He gets up at 7:30 in the morning. How many hours' sleep a night does he get?

______

14. Bob can walk a mile in 20 minutes. At this rate, how long would it take him to walk three miles?

______

15. Jean's mother is roasting a four-pound chicken. It should stay in the oven about 30 minutes for each pound. How many minutes should Jean's mother cook the chicken?

______

16. Tom visits the dentist to have his teeth cleaned and checked every six months. How many times a year is this?

______

Page 121 provides enrichment material which can be used to extend concepts so far introduced.

Can You Add and Subtract Money Numbers?

$5.00
1.25

1. Jean had five dollars. She spent $1.25 for some drawing materials. To find how much she had left, subtract $1.25 from $5.00.

First subtract the cents. You cannot subtract 5 cents from 0 cents. You cannot borrow a dime because there are no dimes to borrow from. So you take a dollar from the 5 dollars and change it into 10 dimes. Then borrow one of the dimes and change it into 10 cents. Now subtract 5 cents from 10 cents.

Next, you subtract 2 dimes from the 9 dimes left. Last, you subtract 1 dollar from the 4 dollars left.

Jean had ____________ left.

Check your work by adding how much money Jean had left to how much she spent. Is the sum $5.00?

Add and check. Be sure to write the dollar sign and point.

	a	*b*	*c*	*d*	*e*	*f*
2.	$3.69 4.17 1.45	$4.39 8.24 6.23	$5.32 6.47 2.98	$4.95 .68 3.09	$4.62 .46 2.37	$8.24 1.62 .41
3.	$4.82 .29 6.51	$5.47 4.36 8.15	$ .98 3.50 7.87	$2.10 9.05 4.66	$7.11 4.14 5.08	$2.69 1.98 8.35
4.	$4.17 3.60 5.90 2.48	$5.49 7.91 9.88 8.68	$2.99 7.79 7.26 5.46	$15.52 24.75 9.16 30.57	$37.17 4.66 25.69 17.78	$ 1.49 54.75 9.55 85.13

Subtract and check.

5.	$7.65 5.20	$4.27 3.15	$5.83 1.65	$6.70 5.56	$8.62 3.47	$4.51 3.39
6.	$4.09 2.38	$5.27 1.43	$9.21 3.87	$2.00 .42	$8.16 .85	$6.24 .43
7.	$12.61 7.56	$14.79 2.89	$25.88 2.97	$14.47 3.69	$25.00 10.38	$48.45 27.79
8.	$12.33 11.67	$14.01 10.72	$32.36 22.49	$18.24 17.32	$43.40 25.56	$21.15 15.65

How Much Change?

1. Sally bought groceries costing 52¢. She gave the clerk a dollar bill. The clerk counted her change: "Fifty-two cents and 3 cents is 55 cents; and 20 cents is 75 cents; and 25 cents is one dollar."

He gave Sally ______ pennies, ______ dimes, and ______ quarter, or ______ cents in all.

Subtract 52¢ from $1 to see whether Sally got the right change.

2. How much change should you get from a half dollar for a purchase of 18¢? ______ The smallest number of coins in change would be ______.

3. How much change should Bill get from a purchase of $1.09, if he gives the clerk $2.00? ______

How many coins? ______

4. Find the change from $5 for a purchase of $2.81.

____ pennies, ____ nickel, ____ dime, ____ dollars

5. Don's family has a fruit stand. One day a man bought a peck of apples for 87¢. If he gave Don a five-dollar bill, what change should Don have given him?

______ pennies, ______ dime, ______ dollars

6. A woman bought a bushel of apples for $3.25 and gave Don a $10 bill. Write down the change he should give her.

____

____

Can You Copy in Columns?

Copy, add, and check.

1. 98 + 37 + 246
2. 1346 + 69 + 728
3. $2.09, $6.54, $8.27
4. $5.00, $ .75, $2.18
5. $12.53, $6.29, $20
6. $1.57 + 48¢ + $3

Copy, subtract, and check.

7. 324 − 65
8. 1709 − 826
9. $4.75 − $1.98
10. $5.00 − $4.28
11. $18 − $3.40
12. $4 − 83¢

1.	**2.**	**3.**
4.	**5.**	**6.**
7.	**8.**	**9.**
10.	**11.**	**12.**

Page 122 provides enrichment material which can be used to extend concepts so far introduced.

Do You Add or Subtract?

1. Jerry has saved $3 to buy stamps for his stamp book. If he buys a packet of stamps for $1.65, how much money will he have left?

How much has Jerry saved? ________ How much does he want to spend? ________ What does the problem ask you? It asks you to find **how much he will have left** if he spends the money. To find how much will be left, you must **subtract.**

Copy the figures in the box and work the problem. Jerry will have ________ left.

2. Ellen spent $ .85 for decorations for her party, $2.65 for ice cream, and $1.10 for cake. How much did she spend in all?

The problem tells you how much Ellen spent for each of three different things. It asks you to find **how much all the things cost together.**

To find how much several things cost, you must **add.** Write the figures you must copy in the box: ________, ________, ________. Add them. Ellen spent ________ in all.

Read each problem carefully. In front of the problem write A if you add, or S if you subtract. Then find the answers and write them in the blanks after the problems.

____**3.** The Lanes took a trip in their car last summer. The first week they drove 948 miles. The second week they drove 1208 miles. How many miles did they drive in both weeks? ________

____**4.** We have started to take a trip of 420 miles. So far, we have gone 86 miles. How many more miles do we still have to go? ________

____**5.** After spending $3.69 for some roller skates, Peggy counted the money left in her purse. It was $1.18. How much must she have had before she bought the skates? ________

____**6.** Ellen bought $2.65 worth of ice cream for her party. She gave the storekeeper $5. How much change did Ellen get? ________

____**7.** Nancy practiced 15 minutes before school yesterday morning and 25 minutes after school in the afternoon. How many minutes did she practice? ________

____**8.** In Problem 7, how many minutes less than one hour did Nancy practice? ________

____**9.** Two loads of coal were brought to our house today. There were 8750 pounds in the first load and 9250 pounds in the second load. How many pounds of coal did we get? ________

____**10.** Sue made some candy and sold it for $1.50. The sugar and other materials cost 68 cents. How much money did Sue make? ________

____**11.** Sam caught some fish and sold them for $2.50. He sold some rabbits for $3.86. How much money did Sam make? ________

____**12.** Jerry got 73 new stamps last month. His friend Larry in the stamp club got 59 new stamps. How many more stamps did Jerry get than Larry? ________

Page 123 provides enrichment material which can be used to extend concepts so far introduced.

Practice in Addition

These examples will help you make sure that you can add. Add and check.

	a	*b*	*c*	*d*	*e*	*f*
1.	67 6	38 8	13 7	45 17	27 34	69 57
2.	146 204	34 148	263 184	478 332	854 877	3475 3848
3.	7 6 9 3 6	9 7 1 8 5	64 85 38 97 52	56 70 20 75 95	634 218 256 969	364 7423 78 2601
4.	$2.03 7.67 5.84 2.49	$2.96 5.71 1.60 6.45	$1.05 9.86 .67 5.25	$4.94 4.24 2.79 .38	$29.79 8.45 12.62 6.00	$58.68 37.04 9.47 45.00

Practice in Subtraction

Subtract. Check by adding.

1.	84 39	63 46	95 17	70 52	80 47	43 34
2.	941 517	590 534	710 209	718 340	607 386	142 59
3.	836 467	504 226	671 172	413 99	700 484	1000 830
4.	$1.30 .81	$1.68 .79	$3.00 2.17	$12.81 7.86	$16.02 3.77	$26.15 19.66
5.	$5.00 3.87	$10.00 6.03	$14.32 9.99	$30.00 25.49	$92.26 88.38	$55.00 50.65

Multiplying Helps You Divide

	1	2	3	4	5	6	7	8	9
1	1	2	3	4					9
2	2	4	6						18
3	3	6	9						27
4	4	8	12						36
5	5	10							45
6	6	12							54
7	7	14							
8	8	16							
9	9	18							

1. Finish this table to show the multiplication and division facts. Do you see how to write the missing numbers?

Find the 54 that is circled in the table. Do you see how the 54 shows that 6 × 9 = 54, 9 × 6 = 54, 54 ÷ 6 = 9, and 54 ÷ 9 = 6?

Write these multiplication and division facts that belong together.

2. 8 × 7 = 54 7 × 8 = 54 56 ÷ 7 = 8 56 ÷ 8 = 7

3. 9 × 8 = 72 8 × 9 = 72 72 ÷ 8 = 9 72 ÷ 9 = 8

4. 7 × 6 = 42 6 × 7 = 42 42 ÷ 7 = 6 42 ÷ 6 = 7

Write the products. In **multiplication,** the answer is called the **product.**

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*l*
5.	4 6 24	7 3 21	6 8 48	8 6 48	7 8 54	9 9 81	3 8 24	8 9 72	3 6 18	9 7 63	4 7 28	6 9 [illegible] 54
6.	8 8 64	7 6 42	9 8 72	6 6 36	7 9 63	4 8 32	6 7 42	9 6 54	4 9 32	7 7 49	3 9 27	8 7 54

Write the quotients. In **division,** the answer is called the **quotient.**

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
7.	5 8) 40	9 9) 81	9 4) 36	3 9) 27	6 8) 48	7 6) 42	8 8) 64	9 7) 63
8.	7 4) 28	5 7) 35	6 9) 54	7 7) 49	9 4) 36	8 5) 40	6 6) 36	8 9) 72
9.	6 7) 42	4 9) 36	9 8) 72	8 7) 56	5 9) 45	9 6) 54	8 6) 48	7 8) 56

Can You Use Multiplication Facts?

1. Bob has orders for 4 dozen eggs. To find how many eggs Bob needs to fill these orders, you can add four 12's. Or you can multiply 12 by 4.

Multiplication is a short way of adding equal numbers of things.

How many eggs are 4 dozen eggs? ______

12 12 12 12	12 4

Write the products.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
2.	14 2 28	32 3 96	21 4 84	20 4 80	43 2 86	30 2 60	13 3 39	31 2 62
3.	70 9 630	43 3 129	61 8 488	82 2 162	94 2 188	80 7 540	42 4 168	21 9 189
4.	51 6 306	71 5 355	31 7 217	60 4 240	51 8 408	21 7 147	81 6 486	52 4 208

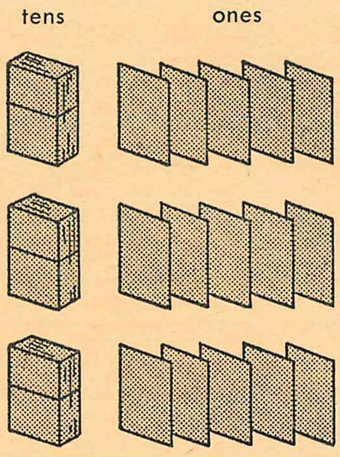
Do You Understand Carrying in Multiplication?

1. Three boys are selling tickets for the school carnival. Each boy has 15 tickets to sell. To find how many tickets all 3 boys have, you can put all the tickets together, or you can add three 15's, or you can multiply 15 by 3.

When you add the three 5's, how many tens do you carry? ______

When you multiply the 5 by the 3, how many tens do you carry? ______

How many tickets in all? ______



tens ones	tens ones
15 15 15	15 3

Multiply. Check by going over your work.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
2.	17 3 51	25 2 50	13 4 52	27 4 108	36 3 108	47 2 94	19 4 76	25 3 75
3.	25 6 150	56 9 504	84 5 420	82 8 656	78 4 312	59 7 413	89 3 267	96 5 480
4.	47 5 235	85 4 340	99 9 821	34 7 238	62 5 310	15 9 135	43 6 258	26 7 182

Practice in Multiplication

Examples 1 to 4 ask you to do two things. First, you multiply one number by another. Then, you add a number to the product.

Write the answers.

These examples will help you do the other examples on this page. They show you how you think, when you carry in multiplication.

	a	*b*	*c*	*d*
1.	(6 × 3) + 5 = 23	(4 × 7) + 3 = 31	(9 × 4) + 7 = 43	(7 × 8) + 6 = 62
2.	(6 × 8) + 4 = 52	(2 × 9) + 1 = 19	(5 × 6) + 3 = 33	(8 × 9) + 8 = 80
3.	(8 × 3) + 2 = 26	(9 × 9) + 7 = 88	(6 × 7) + 5 = 47	(9 × 5) + 3 = 48
4.	(7 × 7) + 4 = 53	(4 × 5) + 3 = 23	(9 × 8) + 7 = 79	(8 × 4) + 2 = 34

Multiply. Check by going over your work.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
5.	27 3 81	78 4 312	85 8 680	69 5 345	73 6 438 7	95 7 655	46 4 184	42 8 336
6.	218 3 654	537 4 2148	367 6 2202	354 9 4086	458 6 2748	931 7 6517	732 5 3660	486 6 2916
7.	502 7 3514	750 8 6000	354 5 1770	835 9 7515	376 7 2632	420 7 2940	304 8 2432	1080 5 5400

Can You Multiply Money Numbers?

Multiply and check. Be sure to write the dollar sign and point in each answer. How many places do you always leave for cents?

	a	*b*	*c*	*d*	*e*	*f*
1.	$ .75 7	$ .34 5	$ .79 9	$ .92 6	$ .39 8	$ .98 5
2.	$4.08 7	$5.16 9	$1.87 6	$7.54 8	$4.21 9	$2.06 5
3.	$12.50 4	$26.94 6	$14.78 9	$36.89 8	$30.80 5	$20.08 7
4.	$10.95 3	$42.33 9	$15.09 8	$12.55 5	$54.82 7	$75.30 6

Page 124 provides enrichment material which can be used to extend concepts so far introduced.

Can You Use Division Facts?

1. In the table, draw circles around the rest of the numbers that can be divided by 6 without a remainder. The table will help you divide by 6.

1	2	3	4	5	[✓ 6]	7	8	9	10
11	[✓ 12]	13	14	15	16	17	[✓ 18]	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

```
    2
6 ) 16
    12
     4
```

Now divide 16 by 6. Look at 16 in the table. Do you see that there are two 6's (12) in 16, with 4 left over?

Knowing the division facts helps you divide with a remainder.

Find the quotients and remainders.

	a	*b*	*c*	*d*	*e*	*f*
2.	8 R5 6) 53 48 5	3 R2 6) 20 18 2	6 R4 6) 40 36 4	7 6) 43 42 1	5 R5 6) 35 30 5	9 R4 6) 58 54 4
3.	6 R3 5) 33 30 3	6 R6 8) 54 48 6	5 R3 4) 23 20 3	3 R4 7) 25 21 4	5 R2 6) 32 30 2	4 R5 9) 41 36 5

Can You Find Two-Figure Quotients?

```
hundreds tens ones
     1
8 ) 120
    8
    40
```

1. Sally has 120 big beads. She wants to use them to make 8 necklaces for presents. There will be the same number of beads in each necklace. To find how many beads to put in each necklace, divide 120 by 8.

(1) You cannot divide 8 into 1; so you must divide 8 into 12 tens. 12 ÷ 8 = 1. Write 1 above the 2 in the tens place.

(2) Multiply 8 × 1 = 8. Write 8 under the 12 tens.

(3) Subtract. 12 − 8 = 4 tens.

(4) Bring down the 0 in the ones place. Finish the division. How many beads should Sally put in each necklace? ______

Divide.

2.	4) 308	6) 474	8) 784	9) 531	7) 364	8) 424
3.	5) 455	9) 504	7) 588	8) 656	6) 390	9) 873

Can You Check Division?

	Check
13 r 2 6) 80 6 20 18 2	13 6 2

1. Sue has made 80 doughnuts. She wants to pack them in boxes, with 6 in each box. To find how many boxes she will need, she divides 80 by 6. The quotient is 13, with a remainder of 2.

To make sure she is right, she multiplies 13 (the number of boxes) by 6 (the number of doughnuts in each box) and adds 2 (the number of doughnuts left over). Was her division right?

Divide and check.

	a	Check	*b*	Check	*c*	Check
2.	91 6) 546	91 6	7) 427		5) 400	
3.	207 4) 828		3) 918		6) 3048	
4.	5) 85		6) 96		4) 92	
5.	8) 304		7) 686		9) 603	
6.	4) 278		9) 676		4) 339	
7.	80 r 2 7) 562 56 2		6) 245		8) 727	

Measuring Length

1. Do you remember the units for measuring length? Fill the blanks below.

1 foot (ft.) = ______ inches (in.)

1 yard = ______ inches

1 yard (yd.) = ______ feet (ft.)

1 mile (mi.) = 5280 feet = ______ yards

2. Write the unit of length you generally use to measure the following things.

a. Your height ____________________

b. The distance to a city ____________________

c. The length of a piece of cloth ____________________

d. The width of a piece of ribbon ____________________

e. The length of a room ____________________

f. The length of a short race ____________________

3. Jim is exactly 5 feet tall. How many inches tall is he? ________

Linda is 56 inches tall. Who is taller, Linda or Jim? ________

How much taller? ________

4. Larry is 4 feet, 9 inches tall. How many inches is this?

48 + 9 = ________

5. Ann had a piece of ribbon a yard long. She cut off a piece 18 inches long to make a bow. How many inches did she have left? ________

6. Sally measured a piece of cloth with a yardstick. The piece was 1 yard and 16 inches long. How many inches of cloth did she have? ________

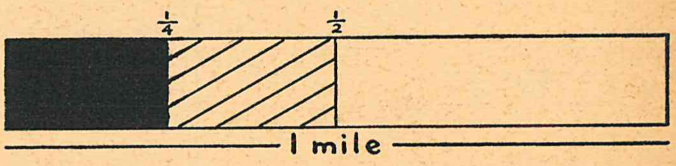
7. The swimming pool in Bill's school is 36 yards long. How many feet long is it? ________

The pool is 10 yards wide. How many feet wide is it? ________

8. Bob Gray and his father measured their kitchen for new linoleum. The floor was 5 yards and 1 foot long, and 4 yards wide. How many feet long and wide was this?

________ long, ________ wide

9. Dick is making an airplane. If he cuts a piece 7 inches long from some wood 1 foot long, how many inches will be left? ________



10. A quarter ($\frac{1}{4}$) mile race is 440 yards. How many yards in a half ($\frac{1}{2}$) mile race? ________

How many yards in a mile race? ________

11. Sally and her mother are making curtains. Each curtain will be 1 yard and 18 inches long when cut. Sally wants to know how many inches this will be. ________

If 6 inches of each curtain are to be put in hems, how many inches long will each finished curtain be? ________

12. Ann and her mother went shopping. One kind of wool material was a yard wide. Another kind was 54 inches wide. How many inches wider was the wider kind? ________

13. Dick wants to make some shelves 1 foot wide. He has some boards 6 inches wide. How many boards must he lay side by side to make each shelf? ________

Page 125 provides enrichment material which can be used to extend concepts so far introduced.

Can You Divide Money Numbers?

dollars dimes cents $ .3 6) $2.10 1 8	*Check*	**1.** Bob sold a 6-pound chicken for $2.10. How much a pound did he get? Divide $2.10 by 6. You cannot divide the 2 in the dollars place by 6, so you must divide 21 dimes by 6. Finish the division. Be sure the point in your quotient is above the point in the number you divide. Bob got $______ a pound. To check, multiply the price per pound by 6, the number of pounds. Is the product $2.10, the price of the chicken?

Divide and check.

	a	*b*	*c*
2.	3) $6.90	5) $2.00	8) $4.80
3.	7) $6.30	3) $2.49	9) $8.19
4.	6) $2.88	7) $4.69	8) $6.00
5.	4) $10.00	8) $12.80	5) $15.40
6.	6) $9.90	4) $12.24	2) $15.00
7.	9) $25.20	5) $30.40	8) $34.00

Do You Multiply or Divide?

1. Don wants to set out 54 lettuce plants in 3 equal rows. How many plants should he put in each row?

How many plants are there in all? ______ How many groups (rows) are the plants to be put in? ______

What does the problem ask you? It asks you to find **the number** of plants **in each group** (row). When you know the total number, and how many groups there are, you **divide** to find the number in each group.

Work the problem. Don should put ______ plants in each row.

2. If Nora reads 16 pages of her book in an hour, about how many pages can she read in 4 hours?

The problem tells you how many pages Nora reads in **one** hour. How many pages? ______ The problem asks you to find **the total number** of pages she can read in a certain number of hours. How many hours? ______ When you know how many groups (hours) and how many (pages) in each group, you **multiply** to find the total number.

In 4 hours, Nora should be able to read ______ pages.

In front of each problem, write M if you multiply or D if you divide. Then find the answers and write them in the blanks after the problems.

______**3.** If oranges cost 5 cents each, how much must Sally pay for a dozen oranges? ______

______**4.** There are 18 boys and girls in Tom's class. If he gives each one 3 pieces of paper, how many pieces of paper does he need? ______

______**5.** Jill has picked 40 roses. If she puts 6 roses in each bunch, how many bunches will she have? ______

How many roses will be left over? ______

______**6.** Ann has 75 cents to spend for apples for a picnic. If apples are 5 cents each, how many can Ann buy? ______

______**7.** Ann's mother sees some blouses for Ann priced at $1.15 each. How much will three blouses cost? ______

______**8.** Nora read 282 words in 3 minutes. How many words a minute did she read on the average? ______

______**9.** Sam sold 42 glasses of lemonade for 6¢ a glass. How much money did he get? ______

______**10.** Jerry bought a set of 3 stamps for 45 cents. How much did each stamp cost? ______

______**11.** Sam and Bob have to put 72 chairs in equal rows for the class play. If they put 8 chairs in each row, how many rows will there be? ______

______**12.** Jean wants to buy six tubes of water colors. They cost 24 cents a tube. How much will the tubes of paint cost her? ______

If she buys 4 sheets of paper and the clerk charges her 60¢, how much a sheet did the paper cost? ______

Page 126 provides enrichment material which can be used to extend concepts so far introduced.

Can You Use Zeros?

You have already been using zeros in many of the problems and examples in this book. The examples below all have zeros in them. Can you add, subtract, multiply, and divide easily with zeros?

1. Write the sums.

a	*b*	*c*	*d*	*e*	*f*	*g*
80	69	30	608	489	308	4009
74	90	80	501	560	702	6001

2. Subtract and check.

90	60	159	506	103	800	7000
20	16	70	342	29	358	2105

3. Write the products.

80	45	28	301	609	740	2007
3	6	5	4	6	5	9

4. Divide. Check by multiplying on another paper.

a	*b*	*c*	*d*	*e*	*f*
$2\overline{)80}$	$8\overline{)400}$	$3\overline{)1800}$	$4\overline{)836}$	$6\overline{)485}$	$3\overline{)902}$

Do You Remember Roman Numbers?

1. What time is it when the hour hand of a clock points to XI? ________ o'clock

2. What chapter comes just after Chapter IX? ________

3. What Roman number comes just before XIX? ________

4. What Roman number comes just after XXIX? ________

5. What Roman number comes between XIV and XVI? ________

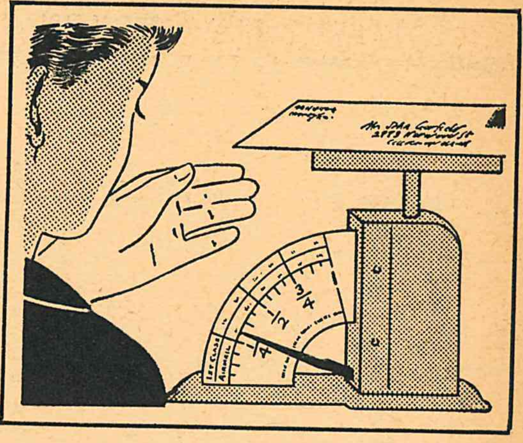
6. Draw a circle around the largest number in each group below.

IX	VIII	X	XXVI	XXIV	XXX	XXVII	XXIII	XXV

7. Match the Roman numbers with our numbers in each set.

a		*b*		*c*	
IV	6	XIX	12	XXXV	31
VI	3	XII	19	XXXIX	35
III	7	XVIII	20	XXXIV	39
VII	4	XX	18	XXXI	34

Measuring Weight



1. Tom is weighing a letter on some letter scales. The scales show 1 pound divided into ounces.

There are 16 ounces (oz.) in one pound (lb.).

How many ounces are there in a half pound? 8 oz In $\frac{1}{4}$ pound? 4 oz In $\frac{1}{8}$ pound? 2 In $\frac{3}{4}$ pound? 12 oz

2. What fraction of a pound is 8 ounces? 1/2 lb If a pound of candy costs 80¢, what should 8 ounces of this candy cost? 40¢

3. If 8 oz. of bacon cost 35¢, how much will Sally have to pay for a pound of this kind of bacon? 70¢

4. Sally sees some dried beef at the store which costs 35¢ for 4 oz. How much a pound would this be? $1.40

5. Ann bought a chocolate candy bar weighing 4 oz. She paid 25¢ for it. How many 4-ounce bars in a pound? 4

Then how much a **pound** did Ann's candy cost? 1.00

6. If a 2-ounce candy bar costs 10¢, how much is this a pound? 80¢

7. Mrs. Lane paid 39¢ for 8 oz. of cheese. How much would a pound of this cheese be worth? 78¢

8. The largest fish Sam caught weighed 1 lb. Bob's largest fish weighed only 13 oz. How many ounces more did Sam's fish weigh? 3 oz

9. Sue's mother bought meat weighing 4 lb. 10 oz. How many ounces less than 5 lb. of meat did she buy? 6 oz

One ton is 2000 pounds.

10. In the zoo, Tom saw an elephant that weighed 3950 lb. How many pounds more than a ton did the elephant weigh? 1950

20
1950

11. Don helped his father load 1600 lb. of lime on their truck. How much less than a ton is 1600 lb.? 4000

2000

12. A jeep trailer can carry $\frac{1}{2}$ ton. How many pounds is this? 1000

13. Don's father said that one of their cows weighed 987 lb. How many pounds less than half a ton does the cow weigh? 13 lb

14. A coal truck can carry 4 tons of coal. How many pounds can it carry? 8000

15. What unit of measure would you use to weigh

a. Your own weight? lbs **b.** A letter? OZ **c.** A ship? TONS

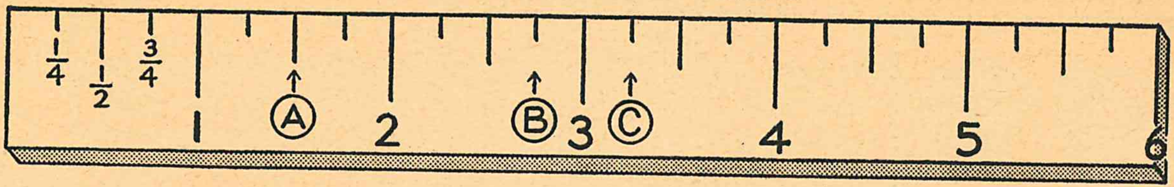
Page 127 provides enrichment material which can be used to extend concepts so far introduced.

Practicing Division

These examples will show you how much you have learned about division. Work carefully, and check each answer by multiplying on another piece of paper.

	a	*b*	*c*	*d*	*e*	*f*
1.	51 4) 204	7) 287	6) 120	9) 639	3) 621	4) 1632
2.	15 6) 90 6 30 30	3) 87	7) 511	5) 245	8) 272	9) 612
3.	237 4) 948 8 14 12 28 28	2) 396	9) 4806	5) 2615	7) 6475	8) 1376
4.	$ .08 9) $ .72	8) $ .40	5) $3.55	4) $2.48	7) $35.49	6) $18.48
5.	$ .85 8) $6.80 6 4 40 40	3) $2.58	4) $ .76	7) $3.22	9) $2.34	4) $1.36
6.	7 r 6 8) 62 56 6	5) 34	3) 17	4) 39	9) 75	5) 49
7.	68 r 1 2) 137 12 17 16 1	4) 417	6) 1815	8) 644	9) 546	6) 5420

Fractions of Inches



1. The picture above shows a ruler 6 inches long. It is half a foot long. Each inch is divided into halves and quarters (fourths). Arrow A points to $1\frac{1}{2}$ inches. Arrow B points to $2\frac{3}{4}$ inches. Arrow C points to _____ inches. Draw arrow D to point to $4\frac{1}{2}$ inches. Draw arrow E to show $4\frac{3}{4}$ inches. Draw arrow F to show $5\frac{1}{4}$ inches.

---

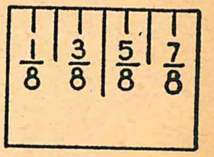
2. Can you count by halves? Fill the blanks below.

$\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, _____, 3, _____, _____, $4\frac{1}{2}$, _____, _____, 6

3. Can you count by quarters? Write the missing numbers below.

$\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, _____, _____, 2, _____, _____, $2\frac{3}{4}$, _____, _____, $3\frac{1}{2}$

The inch shown at the right is divided into halves, quarters, and eighths.



4. How many fourths make $\frac{1}{2}$ inch? $\frac{\_}{4} = \frac{1}{2}$.

5. How many eighths make $\frac{1}{4}$? $\frac{\_}{8} = \frac{1}{4}$. How many eighths make $\frac{1}{2}$? $\frac{\_}{8} = \frac{1}{2}$.

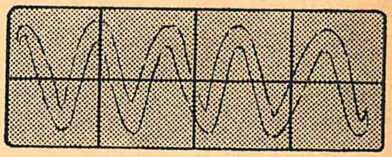
How many eighths is $\frac{3}{4}$? $\frac{\_}{8} = \frac{3}{4}$.

6. Can you count by eighths? Write the missing numbers below.

$\frac{1}{8}$, $\frac{1}{4}$, _____, $\frac{1}{2}$, _____, $\frac{3}{4}$, _____, 1, $1\frac{1}{8}$, _____, $1\frac{3}{8}$, _____, $1\frac{5}{8}$, _____, _____, 2

7. Draw a circle around the largest fraction. $\frac{1}{8}$, $\frac{1}{2}$, $\frac{1}{4}$

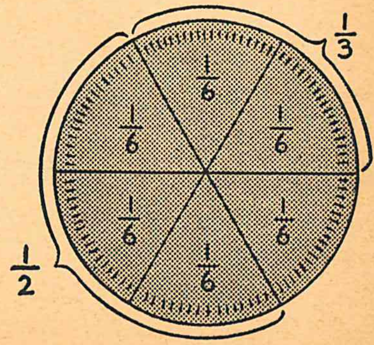
Can You Change Fractions?



1. This candy bar is divided into _____ equal parts. Each part is one __________ of the bar.

2. Write the missing fractions. The picture will help you.

$\frac{1}{2} = \frac{\_}{4}$ $\frac{1}{2} = \frac{\_}{8}$ $\frac{1}{4} = \frac{\_}{8}$ $\frac{3}{4} = \frac{\_}{8}$



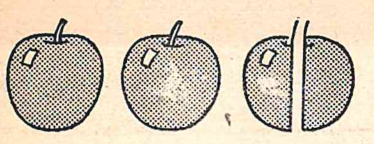
3. This pie is divided into 6 equal pieces. Each piece is $\frac{1}{6}$ of the pie.

4. How many sixths make $\frac{1}{2}$ of the pie? $\frac{\_}{6} = \frac{1}{2}$

5. How many sixths make $\frac{1}{3}$ of the pie? $\frac{\_}{6} = \frac{1}{3}$

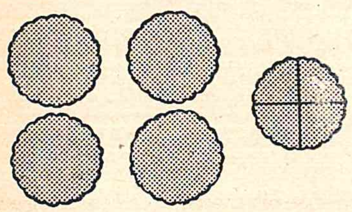
6. How many sixths make $\frac{2}{3}$ of the pie? $\frac{\_}{6} = \frac{2}{3}$

Fractions in Quotients



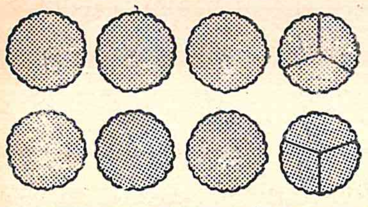
1. Jean has 3 apples. She wants to share them equally with Ann. Each girl gets $\frac{1}{2}$ of 3 apples. Write A on the apples Ann gets. Ann gets 1 apple and half an apple, or $1\frac{1}{2}$ apples.

$$\begin{array}{r} 1\frac{1}{2} \\ 2\overline{)3} \\ 2 \\ \hline 1 \end{array}$$



2. Sue brought 5 cookies to school. She will share them equally with three other girls. Each one will have $\frac{1}{4}$ of 5 cookies. Write S on the cookies Sue will have. She will have ____ cookies.

$$\begin{array}{r} 1\frac{1}{4} \\ 4\overline{)5} \\ 4 \\ \hline 1 \end{array}$$



3. Bob, Sam, and Don have 8 cookies to divide equally. Write B, S, and D on the cookies each boy will get. Each boy will get ____ cookies.

$$\begin{array}{r} 2\frac{2}{3} \\ 3\overline{)8} \\ 6 \\ \hline 2 \end{array}$$

Divide. Write each remainder as a fraction in the quotient.

	a	*b*	*c*	*d*	*e*	*f*
4.	$2\overline{)9}$	$3\overline{)7}$	$4\overline{)9}$	$5\overline{)16}$	$4\overline{)21}$	$7\overline{)15}$
5.	$\begin{array}{r} 2\frac{3}{4} \\ 4\overline{)11} \\ 8 \\ \hline 3 \end{array}$	$5\overline{)23}$	$9\overline{)20}$	$6\overline{)29}$	$8\overline{)35}$	$5\overline{)47}$
6.	$3\overline{)25}$	$5\overline{)32}$	$4\overline{)33}$	$7\overline{)25}$	$9\overline{)85}$	$4\overline{)27}$
7.	$8\overline{)59}$	$5\overline{)27}$	$9\overline{)70}$	$4\overline{)39}$	$3\overline{)29}$	$8\overline{)27}$
8.	$5\overline{)46}$	$8\overline{)31}$	$6\overline{)43}$			

$$\begin{array}{r} 6\frac{8}{9} \\ 9\overline{)62} \\ 54 \\ \hline 8 \end{array}$$

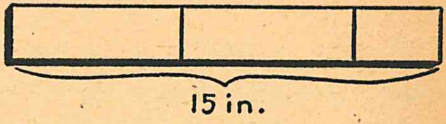
Check

$$\begin{array}{r} 6 \\ 9 \\ \hline 54 \\ 8 \\ \hline 62 \end{array}$$

Do you see how to check this division? Check your division in Examples 4, 5, 6, 7, and 8 above.

Fractions or Remainders?

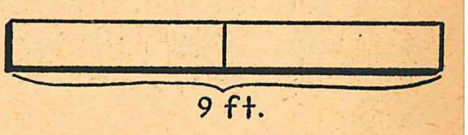
In some division problems, you write the remainder as a fraction. In other problems, you must leave the remainder as a whole number.



1. Don has a strip of wood 15 inches long. How many garden markers each 6 in. long can he cut from it?

Here, the problem asks you the number of whole markers Don can make. The remainder isn't part of the answer—it is simply the wood that is left over. You leave it as a whole number.

Don can get 2 markers. There will be 3 in. left.



2. Dick wants to cut a board 9 feet long into halves. How many feet will be in each half?

Here, nothing is going to be left over. The remainder is an important part of the answer. You should write the remainder as a fraction.

Each half of the board will be 4 1/2 feet long.

Read each of the easy division problems below. In front of the problem write R if the remainder can be left as a whole number. Write F if the remainder should be written as a fraction. Then write the answers in the blanks after the problems.

R **3.** Bob's father has 7 Indian head pennies to divide equally between Bob and Sue. How many pennies will each one get? 3 r 1

F **4.** Sue is going to divide 9 pieces of fudge among 4 girls. How many pieces will each girl get? 2 1/4

R **5.** Sally wants to cut a piece of ribbon 17 inches long into 4 equal parts. How many inches long will each part be? 4 r. 1

R **6.** There are 10 marbles to be divided among 3 boys. How many marbles will each boy get? 3 R. 1

R **7.** On the golf course, Tom and Bill found 11 lost golf balls. If they share the balls equally, how many will each boy get? 5 R. 1

R **8.** Bob wants to put 27 baby chicks into two pens, an equal number in each. How many should go in each one? 13 R. 1

F **9.** Jean, Peggy, and Ann want to share 7 candy bars. How many bars will each girl have? 2 1/3

R **10.** Bill has a quarter. How many 6-cent ice cream cones can he buy? 4 R. 1

R **11.** There are 13 boys to play bat ball. If they are divided into two equal teams, how many boys will there be on each team? 6 R. 1

F **12.** Three girls came over to see Ellen, and Ellen made some lemonade. There turned out to be 11 glassfuls of lemonade. How much lemonade could each of the 4 girls have? 2 3/4

F **13.** Jean and Ann want dresses alike. Ann's mother bought 7 yards of goods, to be shared equally by the girls. How many yards will each one have for a dress? 3 1/2

R **14.** How many 5-cent cupcakes can Sally buy with 23¢? 4 R. 3

L.A. City School Districts
DODSON JUNIOR HIGH

Page 128 provides enrichment material which can be used to extend concepts so far introduced.

Some Problems About Money

In front of each problem write A, S, M, or D to tell whether you will add, subtract, multiply, or divide. Find the answers and write them in the blanks after the problems.

M **1.** A neighbor pays Jean $1.25 every Saturday afternoon for staying with her little girl. How much money will Jean earn in 4 weeks?

$ 4,60

S **2.** Joe wants to buy a record album costing $4.50. He has saved $2.95. How much money does he still need?

$ 1.55

A **3.** Mr. Lane spent $1.87 for gasoline and 35¢ for oil for his car. How much did he pay for both?

$ 3,22

D **4.** Sam is saving money to buy 4 Christmas presents. He has saved $3.00. If he spends the same amount for each, how much can he spend per present?

$ 1.25

S **5.** Allen paid $5.12 for a camera and some film. If the camera cost $4.55, how much did Allen pay for the film?

48¢

M **6.** Besides selling eggs, Bob raises chickens to sell. This year he wants to buy 125 baby chicks, at 8¢ each. How much will he have to pay for them?

$ 10.00

M **7.** Sue sold 6 boxes of candy, for 75¢ a box. How much money did she get for them?

$ 4,50

S **8.** If Sue spent $1.37 for the things to make the candy in Problem 7, how much more than her expenses did she make?

$ 3.13

A **9.** How much money does Ann need to buy a dress costing $6.98 and a hat costing $2.45?

10.43

D **10.** One month Bill earned $5.30. He saved half of it. How much money did he save?

2.65

M **11.** Don picked 48 ears of corn in his garden. He sold it to a store for 3 cents an ear. How much was he paid for the 48 ears?

1.44

S **12.** One week Bob sold $12.31 worth of chickens and eggs. He spent $9.75 of this amount for feed and other supplies. How much money did he make?

2,56

S **13.** Peggy counted her money and found she had just $4.39. She wanted to buy some ice skates costing $5.25. How much money did she still need?

96¢

D **14.** If Ellen saves 5¢ a day, how long will it take her to save 60¢?

12 days

D **15.** Mrs. Lane spent 75¢ for 5 fancy grapefruit. What was the average cost of each grapefruit?

15¢

M **16.** Don had 6 rides on the roller coaster, for 18¢ a ride. How much did he spend for them?

$ 1.08

Measuring Capacity

Often, you want to know how much a bottle, or a basket, or a can will hold. You want to know the **capacity** of that container.

Fruit and vegetables are often sold in different-sized baskets. They are sold by **dry measure.** Dry measure includes pints, quarts, pecks, and bushels.

Many things like milk, ice cream, paint, etc., are sold by **liquid measure.** Liquid measure includes pints, quarts, and gallons.

The pint and quart in dry measure are just a little larger than the liquid pint and quart. C

1 quart (qt.) = 2 pints (pt.)
1 gallon (gal.) = 4 qt.
1 peck (pk.) = 8 qt.
1 bushel (bu.) = 4 pk.

1. How many pints in a gallon? 8 How many quarts in a bushel? 32 C

2. What units of measure do you use to measure:

a. Milk pt., qt., gal.

b. Gasoline for a car ________

c. Cream ________

d. Ice cream qt, pt, gal C

e. Apples picked on a farm ________

f. Strawberries bu., pk C

3. If a pint of ice cream will serve 3 persons, how many persons will a quart of ice cream serve? 6 C

4. Sue and her mother made 3 gallons of tomato juice. They put it into quart jars. How many quart jars could they fill? 12 C

5. Ellen is buying ice cream for her party. A pint of ice cream costs 35¢. How much a quart is this? 70¢ C

6. A quart of ice cream costs 65¢. How much will Ellen save, in Problem 5, if she buys a quart instead of 2 pints? 5¢ C

7. Ellen could buy a half-gallon package of ice cream for $1.05. How many quarts is ½ gal.? 2 C

If a quart of ice cream costs 65¢, how much will Ellen save by buying the half-gallon package instead of 2 quart packages? $.25

65
x 2
130

1.30
-105
25

8. If peaches are selling for $2.00 a bushel, how much should Don charge for a peck of peaches? C 50¢

9. Don sold apples in half-bushel baskets. How many quarts are there in ½ bushel? C 16

10. Don picked a bushel of peaches, and sold 3 pecks. How many pecks of peaches were left? X C 1

11. Ann's father bought two gallons of paint for his garage. When he finished, he had 1 quart left. How many quarts did he use? X 4

12. If raspberries are 30¢ a pint, how much will Mrs. Lane have to pay for 3 quarts of them? C 1.80

13. Don's father bought a 5-gallon can of oil for his truck. How many quarts of oil did he buy? C 20

Can You Do Quickies?

Here are some quickies. See whether you can work them without a pencil. Just write the answers.

1. Joe practiced on his trumpet from 9:15 to 9:45. How many minutes did he practice?

30 min

2. Bob has an order for 2 dozen eggs. How many eggs must he have to fill the order?

24

3. Sam and his father went fishing. They caught 13 fish in the morning, and 8 fish in the afternoon. How many fish did they catch that day?

21

4. Oranges are 4 cents each. How many oranges can I buy for 10 cents?

2 R. 2

In this problem, is the remainder a whole number or a fraction?

whole

5. Sue squeezes 2 oranges for each member of the family for breakfast. How many persons will a dozen oranges serve?

6

6. How much money does Peggy need to buy 15 cents' worth of jacks and a 9-cent ball?

24¢

7. Larry paid 40 cents for $\frac{1}{2}$ pound of candy. How much a pound is this kind of candy?

80¢

8. The thermometer outdoors reads 43°. Indoors it is 68°. How many degrees colder is it outdoors than indoors?

25°

9. A quart of milk will make enough cocoa for 6 people. If Sue wants to make cocoa for 18 people, how many quarts of milk will she need?

3

10. Don guessed that a large pumpkin weighed 40 pounds. It really weighed 35 pounds. How many pounds too much did Don guess?

5 lbs

11. If Peggy's pony eats 2 quarts of oats a day, how many quarts will the pony eat in a week?

14

12. Barbara's watch is 4 minutes slow. When her watch says 1:12, what is the correct time?

1:16

13. Don has a 12-quart pail for watering his garden. How many gallons does the pail hold?

3

14. Nora is reading a book with 160 pages. She is on page 30. How many pages does she still have to read?

130

15. If a quart of ice cream will serve 6 persons, how many quarts of ice cream will we need for 30 people at our picnic?

5

16. Jerry is collecting a set of 30 Dutch stamps. He has 22 of these stamps now. How many stamps does he still need?

8

Test pages 1 and 2 are to be given following completion of this page.

How Much Is a Million?

1. You know that 10 tens are a **hundred.** 10 × 10 = ________

2. You know that 10 hundreds are a **thousand.** 10 × 100 = __________

3. 1000 thousands are a **million.** 1000 × 1000 = 1,000,000. How many zeros are used in writing a million? ______

4. Are there any cities with a population of more than a million in your state? Find out how many cities near you it takes to make a total of a million people.

5. In 1900, there were about 76 million people in the United States. Today, the population of the United States is over 150 million.

Write 76 million in figures: ____________________ Write 150 million: ____________________

6. 2,030,420 means 2 million, 30 thousand, 420.

36,043,750 means ______ million, ______ thousand, ______.

Write the number that means:

7. Five million ____________________

8. Thirteen million ____________________

9. 700 million ____________________

10. 1 million, 250 thousand ____________________

11. 2 million, 768 thousand ____________________

12. 10 million, 56 thousand, 500 ____________________

13. 6 million, 425 thousand, 60 ____________________

14. 307 million, 600 thousand ____________________

15. Commas help you read large numbers. Write commas in 3 7 4 8 0 6 2.

This number means ______ million, ______ thousand, ______.

16. 7 3 2 0 0 0 0 means ______ million, ______ thousand.

17. 3 5 0 0 0 0 0 0 0 means ______ million.

18. 1 0 0 8 0 0 9 0 means ______ million, ______ thousand, ______.

19. 2,983,250 is almost 3 million. 7,995,000 is almost ______ million.

6,011,250 is a little more than ______ million.

Write the number that is the nearest million to

20. 4,936,587 ____________________

21. 15,038,499 ____________________

22. 32,947,860 ____________________

23. 486,006,932 ____________________

24. 409,999,899 ____________________

25. 21,091,002 ____________________

Draw a line under the larger number.

26. 3,483,999 or 3,507,236

27. 651,882,000 or 651,807,466

Page 129 provides enrichment material which can be used to extend concepts so far introduced.

Multiplying by Numbers Ending in Zero

1.	2.	3.
28 9	28 10 280	28 20 60

1. Don often works on his father's farm. One summer he picked tomatoes. The first day he picked 9 baskets of tomatoes. Each basket weighed 28 pounds. How many pounds of tomatoes did Don pick? 9 × 28 = ______

2. The next day Don picked 10 baskets of tomatoes. To find how many pounds he picked, multiply 28 by 10. 10 × 28 = 280. Do you see why? 0 × 28 = 0. 1 ten × 28 = 28 tens. In the product 280, the 8 has a value of 80. The 2 has a value of ______.

Do you remember the short way to multiply by 10?

To multiply any number by 10, add 0 to the number.

3. One day Don picked 20 baskets of tomatoes. Find how many pounds he picked by finishing the multiplication in the third box above. 20 × 28 = ______

This problem is like multiplying by 10, only you multiply by 2 tens. 0 × 28 = 0. 2 tens × 28 = ______ tens.

50 30 1500

4. Don helped his father load 30 bags of lime into the truck. Each bag weighed 50 lb. To find the total weight of the lime, multiply 50 by 30. 30 × 50 = ______

Any number multiplied by 0 is 0.

When you multiply a number by a number ending in 0, the product ends in 0.

Write the products.

	a	*b*	*c*	*d*	*e*	*f*	*g*
5.	36 10	42 20	63 20	51 30	25 30	39 20	17 40
6.	47 30	28 40	68 20	17 50	38 30	96 30	49 40
7.	68 50	53 40	57 60	65 50	69 30	86 70	24 50
8.	93 70	62 60	28 80	36 90	58 20	84 60	35 50
9.	10 10	30 10	40 20	70 20	39 60	64 40	94 90

	a	*b*	*c*	*d*	*e*	*f*
10.	$ .46 10	$ .68 20	$ .75 40	$1.60 30 $48.00	$2.95 60	$5.40 50

Multiplying by Two-Figure Numbers

$$\begin{array}{r} 34\\ \underline{12}\\ 68\\ \underline{34} \end{array}$$

1. The Kings have one of the new small cars. Their car will go 34 miles on a gallon of gasoline. To find how many miles it will go on 12 gallons, multiply 34 by 12.

You remember the long way to do this. Multiplying 34 by 12 is the same as multiplying by 2 ones and 1 ten. 2 × 34 = ______. 10 × 34 = ______.

68 + 340 = ______.

There is a shorter way to multiply numbers like this. Look at the example in the box. First, multiply 34 by 2. Start writing the product in the ones place. Then multiply 34 by 1. Start writing this product in the tens place. These two products are called **partial products.** Add them to get the **final product.** The Kings' car will go ______ miles.

Multiply.

	a	*b*	*c*	*d*	*e*	*f*
2.	38 23 114 76	79 27	36 48	74 57	32 75	84 98
3.	75 24	18 63	69 95	89 47	97 98	54 36

Multiplying Money Numbers

$$\begin{array}{r} \$2.75\\ \underline{25} \end{array}$$

1. In Nora's classroom there are 25 dictionaries, one for each pupil. Each dictionary cost $2.75. To find the total cost, multiply ________ by ________.

How do you know your answer will be more than $50? After you have multiplied, write the point and the dollar sign in the product. The total cost is $________.

Multiply.

2.	$ .35 19	$1.49 46	$ .97 32	$2.50 27	$1.58 85	$2.96 29
3.	$3.50 17	$4.02 35	$1.66 61	$9.45 48	$7.24 39	$8.06 72

Page 130 provides enrichment material which can be used to extend concepts so far introduced.

Checking Multiplication

Example		*Check*
78	Multiplicand	46
46	Multiplier	78
468	Partial product	
312	Partial product	
3588	Product	

1. When you multiply 78 by 46, 78 is called the **multiplicand** and 46 the **multiplier.** You can check multiplication by exchanging the multiplier and the multiplicand and multiplying again.

Check this example. Do you get the same product?

Multiply. Check by multiplying again.

	a	*Check*	*b*	*Check*	*c*	*Check*
2.	93 47	47 93	$ .62 58	58 62	$ .75 37	
3.	86 21		79 92		$ .46 87	
4.	72 57		58 92		$ .39 83	
5.	36 94		$ .53 36		$ .64 43	

Multiplication Quickies

Here are some short cuts that will help you multiply without using a pencil. Just write the answers.

1. There are 29 pupils in Linda's room. The school furnishes each pupil 10 pencils a year. How many pencils are needed in all?

You may write the problem 29 × 10 or 10 × 29. It is easier to multiply by 10. 10 × 29 = 290.

An easy way to multiply a number by 10 is to write 0 after the number.

Write the missing products.

2. 10 × 35 = 350

3. 10 × 68 = 680

4. 10 × 30 = 300

5. 10 × 90 = 900

6. 10 × 127 = 1270

7. 10 × 240 = 2400

8. Bob wants to buy 75 baby chicks at 10¢ each. To find the total cost, multiply 75 by 10. Write the point and dollar sign in your answers. $7.50

9. Jill is secretary of her 4-H club. She wants to buy 120 one-cent stamps.

You can see that the stamps will cost Jill 120 pennies. Write 120 pennies with the dollar sign and point. How much money will Jill need? $1.20

---

10. How many pupils can 10 buses carry to a concert if each bus holds 36 pupils? 360

11. How many pencils are needed for the 289 pupils in a school if each pupil gets 10 pencils during the year? 2890

12. We want to sell 85 tickets for our play at 10¢ each. If we sell them all, how much money will we get? $8.50

13. Find the total cost of 350 pencils costing 1 cent apiece. $3.50

14. How much must Bob pay in all for 50 baby chicks costing 10 cents each? $5.00

15. Don's father pays him 1 cent a pound for picking and packing peaches. How much will Don get for 260 lb. of peaches? $2.60

16. Don picked 19 lb. of tomatoes in his garden. He sold them for 10¢ a pound. How much money did he get for his tomatoes? $1.90

17. Don plans to save $5 a month for 10 months. How much money can he save in this time? $50

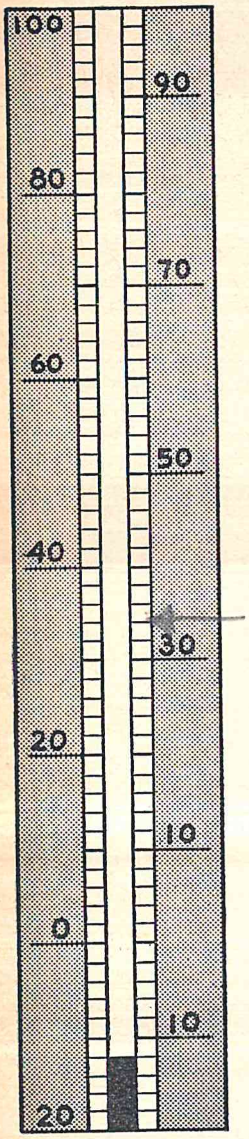
18. Movie tickets are 35¢ each. If Ellen takes 9 other girls to the movie as part of her birthday party, how much must she pay for tickets for them all? 3.50 $4.10

19. Jill sold a dozen roses separately, for 10 cents a rose. How much did she get for the dozen? $1.20

20. Mr. Gray took Sue, Bob, and Sam to the fair. He bought them 27 rides at the amusement park, for 10¢ a ride. How much did all the rides cost? $2.70

21. Jerry's mother needs 500 penny post cards. How much will they cost? $5.00

Measuring Heat



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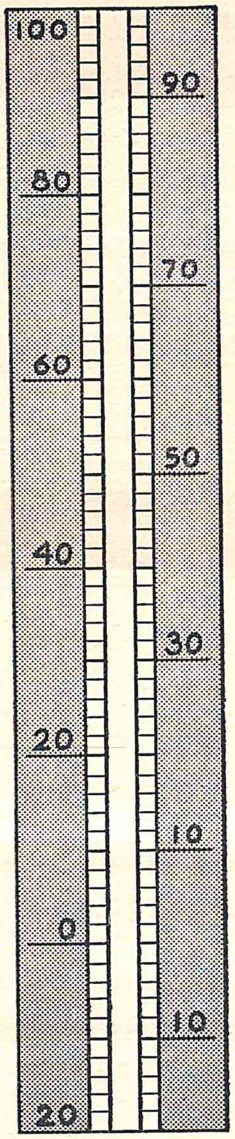


II

1. One cold winter day Tom read the temperature. Thermometer I shows the temperature outdoors. It was 12 degrees below zero (—12°). The temperature in the schoolroom was 68°. Mark 68° on Thermometer II.

To find out how many degrees colder it was outdoors than indoors, **add** 12 and 68.

68
12° + 68° = 80°
70

The temperature at which water freezes is 32°. This temperature is called the **freezing point of water.**

2. Make an arrow on Thermometer I to show the freezing point. How many degrees above freezing is 68°? 32 36

3. How many degrees below freezing is —12°? 32 20°

Water boils at 212°. This temperature is called the **boiling point of water.**

212
32
180

4. How many degrees above the freezing point is the boiling point of water? 180°

5. The average January temperature in Miami, Florida, is 68°. In Fairbanks, Alaska, it is —11°. How many degrees warmer is it in Miami than in Fairbanks? 57 57°

6. In Madison, Wisconsin, the highest temperature ever recorded is 107°, and the lowest is —29°. What is the difference between these two temperatures? 107 29 78 78°

---

7. One week Tom read the temperature outdoors every school day at 9:00 a.m. It was 16°, 27°, 34°, 20°, and 18°. To find the **average** temperature, add the five numbers and divide by 5. What was the average temperature for the 5 days? 25

How many degrees below the average was the reading on the first day (16°)? -7

8. The temperature of a hot oven is 450°. How much hotter is this than the boiling point of water? 238°

9. Sue was making some popcorn balls. She had to boil the sirup until her candy thermometer said 290°. How many degrees more than the boiling point of water was this? 78°

10. One night, the radio announcer said that the coldest temperature that day in the United States was 36° below zero. The warmest was 74° above zero. How many degrees colder was the coldest place than the warmest place? 38°

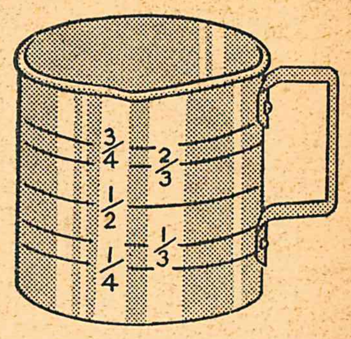
Page 131 provides enrichment material which can be used to extend concepts so far introduced.

Using Measures in Cooking

Sue likes to cook. Many times she has to use measures in her cooking. Here is a table of some of the measures she uses.

2pt - qt

1 pint = 2 cups
1 cup = 16 tablespoons
1 tablespoon = 3 teaspoons



1. The picture shows the measuring cup Sue uses. Which is more, $\frac{1}{3}$ cup or $\frac{1}{4}$ cup? 1/3 $\frac{2}{3}$ cup or $\frac{3}{4}$ cup? 3/4

2. There are 2 cups in a pint. What part of a pint is a cup? 16 How many cups of milk are there in one quart of milk? 4

3. If milk costs 20¢ a quart, what is the cost of a cup of milk? 5¢

4. Four cups of flour weigh 1 pound. What part of a pound does 1 cup of flour weigh? 1/4 lb At 8¢ a pound, what does a cup of flour cost? 2¢

5. Two cups of sugar weigh 1 pound. What part of a pound does 1 cup of sugar weigh? 1/2 At 10¢ a pound, what does a cup of sugar cost? 5¢

6. There are 16 tablespoons in a cup. Sue used 4 tablespoons of flour in some gravy. What part of a cup of flour did she use? 1/4

7. There are 3 teaspoons in a tablespoon. A muffin recipe called for 6 teaspoons of sugar. How many tablespoons is this? 2

8. Sue uses 2 ounces of chocolate every time she makes fudge. How many times can she make fudge with 1 pound of chocolate? 8

9. When Sue makes fudge, she heats the mixture to 236°. Then she cools it to 110° before she beats it. How many degrees cooler is 110° than 236°? 126°

236
-110
126

10. Sue uses a very hot oven (450°) for baking biscuits. She uses a moderate oven (350°) for baking cake. How many degrees hotter should the oven be for baking biscuits than for baking cake? 100°

11. Sue's mother says that a lamb roast should be cooked 30 minutes for each pound. How many minutes should a 3-pound lamb roast be cooked? 1½ hrs How many minutes more than 1 hour is this? 30 mins

12. Sue's father likes his eggs boiled for $3\frac{1}{2}$ minutes. How many seconds more than 3 minutes is this? 30 sec

13. It takes about 25 minutes to bake muffins. If Sue puts her muffins into the oven at 8:15, she should take them out by 8:40.

14. Sue put some biscuits into the oven at 10 minutes of 8. She took them out at 5 minutes past 8. How many minutes had they been in the oven? 15 mins

Multiplying by Three-Figure Numbers

Example	*Check*
$\begin{array}{r} 384 \\ 168 \\ \hline 3072 \\ 2304 \\ 384 \\ \hline 64512 \end{array}$	$\begin{array}{r} 168 \\ 384 \\ \hline \end{array}$

1. Nora wanted to know about how many words there were in a 168-page book. She found that there were about 384 words on a page. On 168 pages, then, there would be 168 × 384 words.

When you multiply 384 by 168, how many partial products are there? _____ You start writing the first partial product in the **ones** place because you are multiplying by 8 **ones.** You start writing the second partial product in the **tens** place because you are multiplying by _____ **tens.** You begin the third partial product in the **hundreds** place because you are multiplying by _____ **hundred.**

How many thousands are there in the answer? _____ Write a comma in the product to show the thousands.

Check the work. Do you get the same product? If not, go over your work until you find your mistake.

	a	*Check*	*b*	*Check*	*c*	*Check*
2.	$\begin{array}{r} 97 \\ 138 \\ \hline \end{array}$	$\begin{array}{r} 138 \\ 97 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ 168 \\ \hline \end{array}$		$\begin{array}{r} 86 \\ 376 \\ \hline \end{array}$	
3.	$\begin{array}{r} 385 \\ 126 \\ \hline \end{array}$		$\begin{array}{r} 279 \\ 652 \\ \hline \end{array}$		$\begin{array}{r} 234 \\ 839 \\ \hline \end{array}$	
4.	$\begin{array}{r} 928 \\ 248 \\ \hline \end{array}$		$\begin{array}{r} 869 \\ 875 \\ \hline \end{array}$		$\begin{array}{r} 974 \\ 549 \\ \hline \end{array}$	

Multiplying With Zeros

1. Tom counted 309 books in the school library. Miss Martin said that the average cost of the books was about $1.75 apiece. To find the total cost of the books, multiply $1.75 by 309.

You multiply by 9 ones, and start writing the partial product in the **ones** place. You do not multiply by any tens, because there are no tens in the number 309. Put a zero in the tens place to show there are no tens.

Example	*Check*
$1.75 309 1575 5250 $540.75	309 175

When you multiply by the ______ hundreds, you start writing the partial product in the ____________________ place. To check, multiply 309 by 175. Do you get the same answer both times?

Write the dollar sign and point in both products. How do you know that the total cost of the books should be more than $300 and less than $600?

Multiply and check.

	a	*Check*	*b*	*Check*	*c*	*Check*
2.	743 108	108 743	896 405		745 306	
3.	287 450 14350 1148	450 287 3150 3600 900	804 180		697 630	
4.	$4.92 6 09	609 492	$7.08 2 60		$8.09 7 09	

Practice in Multiplication

Multiply. Check by multiplying.

	a	*b*	*c*	*d*	*e*	*f*
1.	47 15	63 58	48 72	56 93	37 74	94 98
2.	235 58	497 27	658 98	609 74	540 45	722 69
3.	$ .76 29	$0.34 94	$2.45 36	$7.69 49	$2.57 83	$9.07 72
4.	345 428	369 263	657 574	498 864	875 824	362 789
5.	609 240	305 603	708 306	503 790	750 805	480 590
6.	$8.50 1 27	$2.75 3 46	$4.95 1 09	$9.04 5 07	$6.78 6 90	$5.03 7 90

Page 132 provides enrichment material which can be used to extend concepts so far introduced.

Measure Quickies

These problems will show how much you know about measures. They are quickies. Just write the answers.

1. If Bill saves $2 a month, how much will he save in a year?

$24

2. Mrs. Lane bought 2 gallons of maple sirup. She wants to put it in quart jars. How many jars does she need?

8

3. How much change should Jean get from a quarter if she spends 8 cents?

25 − 8 = 17

17

4. Don has a dozen ears of corn to sell. If he gets 4 cents an ear for it, how much money will he get?

12 × 4 = 48

48¢

5. If today is December 12, what will be the date one week from today?

19

19th

6. Sam caught a catfish 1 foot long and a sunfish 7 inches long. How many inches longer than the sunfish is the catfish?

24 − 7 = 7

17

7. Nancy wants to practice her piano lesson for an hour. After she has practiced 40 minutes, how many minutes more must she practice?

20 mins

8. Ellen paid 40 cents for a pint of ice cream. How much is this a quart?

12 × 4 = 48

80¢

9. Jim's sister is just 4 feet tall. How many inches tall is she?

48 IN

10. Don's father has a truck that will carry a load of 5 tons. How many pounds is this?

10,000

11. Don is picking a bushel of cherries for his mother to can. He has already picked 20 quarts. How many more quarts must he pick?

______

12. "Thirty days has September, April, June, and November." All the rest of the months have 31 days, except February.

How many weeks are there in January? How many days over?

4 weeks, 3 days

13. How many pencils costing a nickel each can Ann buy for a quarter?

5

14. Sally bought a 2-ounce package of salted peanuts. How many packages of this size does it take to make a pound?

8

15. Dave's mother said that paper napkins for their family cost about 1 cent a day. How much is that for a year of 365 days?

3.65

16. Mr. Lane's train was due at 10:55 but it is 15 minutes late. When should it come?

11:10

17. Joe's watch is 3 minutes fast. When his watch reads 2 o'clock, what is the correct time?

1:57

18. Early one morning the temperature was 4° below zero. At noon it was 25° above zero. How many degrees warmer was it at noon?

21°

19. Bill can swim 20 yards. How many feet can he swim?

______

Can You Tell Which Process To Use?

The problems on this page do not have any numbers in them. Just tell which process you would use to work each problem, by writing in the blank **add, subtract, multiply,** or **divide.**

1. You know how many pounds Joe weighs and how many pounds Jerry weighs. How do you find out how much heavier one boy is than the other?

S

2. You know how many minutes Nancy practices before she goes to school and how many minutes she practices when she comes home. How do you find the total number of minutes Nancy practices?

A

3. You know how much one baseball suit costs. How do you find how much a baseball team must pay for suits for all the players?

M

4. You know the price of a pencil. How do you find how many pencils you can buy with the money you have?

d

5. You know the price of a pair of roller skates. You know how much money Peggy has. How do you find how much money she still needs to buy the skates?

S

6. You know how many rows of seats there are in the auditorium. You know how many seats there are in each row. How do you find how many seats there are in the auditorium?

M

7. You know the price of each of two footballs. How do you find how much cheaper one football is than the other?

S

8. You know how many marbles Bill has and how many marbles Jim has. How do you find how many marbles both boys have?

A

9. You know how many miles Mr. Lane drove on a trip, and how many gallons of gasoline his car used on the trip. How do you find how many miles the car went on one gallon of gasoline?

M

10. You know how many miles an airplane flies in an hour. How do you find how far it can fly in a certain number of hours?

d

11. You know how many miles an hour you can walk. If you keep to the same speed, how do you find how many hours it will take you to walk a certain number of miles? WALK IT [illegible] ME!

d

12. You know how much a baseball glove costs and how much a bat costs. How do you find how much Dave must pay for both of these things?

A

13. You know how much you paid for several pounds of sugar. How do you find the price of each pound?

M

14. You know how much money you have and how much money you are going to spend. How do you find how much money you will have left?

S

Can You Make Up Questions for Problems?

Finish these problems by writing a good question for each one. Then solve the problems and write the answers in the blanks. Did everyone in the class get the same answers?

Work Space

1. We are arranging 72 chairs for a school program. We want to put them in 6 equal rows. ________________

________________? Answer ________

2. Don sold 15 pumpkins from his garden. He got 20 cents for each pumpkin.

________________?

Answer ________

3. Bill bought a pair of skates for $5.25 and a hockey stick for 95 cents.

________________?

Answer ________

4. Mary is 53 inches tall. Larry is 61 inches tall. ________________

________________? Answer ________

5. Don's father paid him $1.40 for working 4 hours. ________________

________________? Answer ________

6. Sally's mother sent her to the store with a five-dollar bill. Sally bought $3.48 worth of groceries. ________________

________________? Answer ________

7. An airplane flew 2100 miles in 6 hours. ________________

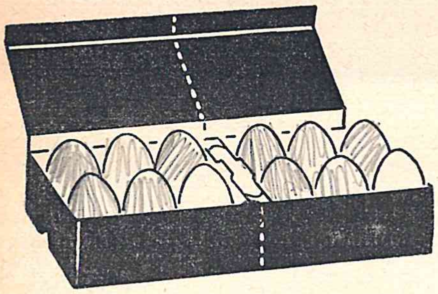
________________? Answer ________

8. Jill wants to buy some pansy plants that cost 3 cents each. She has 75¢.

________________?

Answer ________

Fractions of Measures



1. Here is a picture of one of the boxes Bob uses for his eggs. The box holds a dozen eggs.

How many eggs are $\frac{1}{2}$ dozen eggs? $\frac{1}{2}$ of 12 = 6

2. How many eggs are $\frac{1}{4}$ dozen eggs? $\frac{1}{4}$ of 12 = 3

3. How many eggs are $\frac{1}{3}$ dozen? 4 $\frac{1}{6}$ dozen? 2

4. Three eggs are **one** fourth of a dozen. Then how many eggs are **three** fourths ($\frac{3}{4}$) of a dozen? $\frac{3}{4}$ of 12 = 9

5. Write X's on **one** third of the dozen eggs above. Write X's on **another** third of the dozen eggs. How many eggs are **two** thirds ($\frac{2}{3}$) of a dozen eggs? $\frac{2}{3}$ of 12 = 8

6. Shade **one** sixth of the dozen eggs. **Five** sixths ($\frac{5}{6}$) of the eggs are not shaded. How many eggs are not shaded? $\frac{5}{6}$ of 12 = 10

Fill the blanks with the correct fractions.

7. 2 eggs = 1/6 doz.

8. 3 eggs = 1/4 doz.

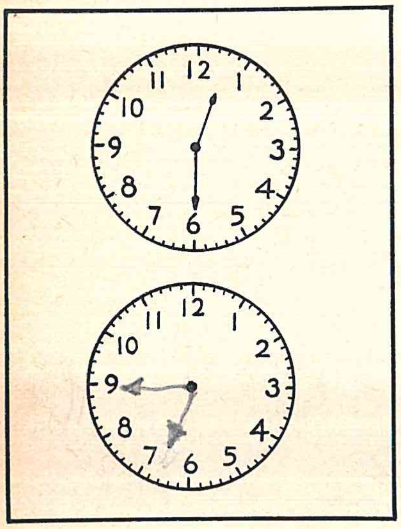
9. 4 = 1/3 doz.

10. 8 = 2/3 doz.

11. 9 = 3/4 doz.

12. 10 = 5/6 doz.

13. Which is most: $\frac{1}{2}$ doz., $\frac{3}{4}$ doz., $\frac{2}{3}$ doz., or $\frac{5}{6}$ doz.? 5/6



14. The top clock shows half past 12 or 12:30. How many minutes are there in $\frac{1}{2}$ hour? $\frac{1}{2}$ of 60 = 30

15. One quarter hour is how many minutes? $\frac{1}{4}$ of 60 = 15

16. Make the lower clock show a quarter of 7; this is the same as 6:45: How many minutes in $\frac{3}{4}$ hour? $\frac{3}{4}$ of 60 = 45

17. Twenty minutes are one third of an hour. How many minutes are there in two thirds of an hour? $\frac{2}{3}$ of 60 = 6

18. How many minutes are one sixth of an hour? $\frac{1}{6}$ of 60 = ______

19. 10 min. = 1/6 hr.

20. 15 min. = 1/4 hr.

21. 20 min. = 1/3 hr.

22. 40 min. = ______ hr.

23. 45 min. = 3/4 hr.

24. 50 min. = ______ hr.

25. Which is largest, $\frac{1}{2}$ hour, $\frac{2}{3}$ hour, or $\frac{3}{4}$ hour? 3/4

26. How many ounces are in one fourth pound? $\frac{1}{4}$ of 16 = 4 How many ounces are $\frac{3}{4}$ pound? $\frac{3}{4}$ of 16 = 12

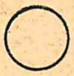
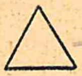
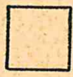
27. How many ounces are in $\frac{1}{8}$ pound? ______

How many ounces are in $\frac{3}{8}$ pound? ______

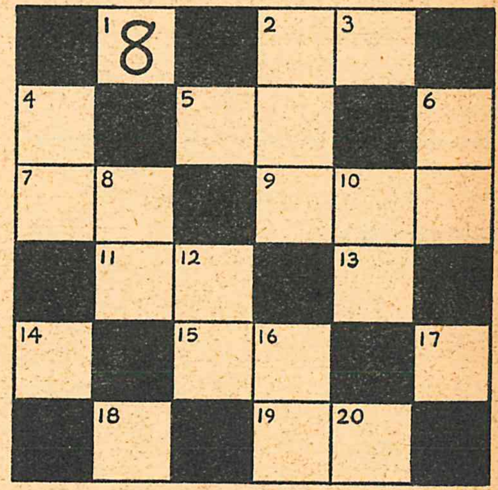
How many ounces are in $\frac{7}{8}$ pound? ______

Page 133 provides enrichment material which can be used to extend concepts so far introduced.

Do You Know Arithmetic Names?

1. What is the word that means one half of a quart? 2 pints
2. What is the name of a quarter of a gallon? 1 quart
3. What is another name for one third of a yard? foot
4. What word means twice a pint? 2 cups
5. What is the name for 16 ounces? pound
6. What word means 24 hours? day
7. What word means 12 months? year
8. What is another name for 2000 pounds? ton
9. What distance is 1760 yards equal to? ____________
10. What coin is worth a tenth of a dollar? dime
11. What is the answer in addition called? Sum
12. The quotient is the name of the answer in division.
13. The answer in division is called the difference or the remainder.
14. What is the name of the answer in multiplication? answer
15. The number you divide by is called the divisor. The number you multiply by is called the divider.
16. What does "minus" tell you to do? subtract "Plus"? add
17. Minuend, subtrahend, remainder are terms used in division.
18. What are these figures?  circle  triangle  square

Fun With Numbers



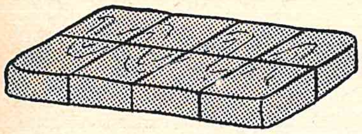
Have you ever worked a cross-number puzzle? First, do the examples marked **Across.** Fill in the answers in the diagram. Then do the examples marked **Down.** If you work all the examples right, the figures will be the same both ways.

Example. No. 1, **Across,** is 2 × 4. The answer is 8. No. 1, **Down,** is 36 − 28. The answer is the same.

Across. **1.** 2 × 4 **2.** 23 + 17 **4.** 3 + 6 **5.** 4 × 8 **6.** 25 ÷ 5 **7.** 19 + 28 **9.** 172 + 459 **11.** 81 − 59 **13.** $\frac{1}{5}$ of 45 **14.** 48 ÷ 8 **15.** 2 dozen **17.** $\frac{1}{9}$ of 72 **18.** 81 ÷ 9 **19.** 31 × 2

Down. **1.** 36 − 28 **2.** 6 × 71 **3.** 8 − 8 **4.** 188 ÷ 2 **5.** 27 ÷ 9 **6.** 66 − 15 **8.** 4 × 18 **10.** 3 × 13 **12.** $\frac{1}{4}$ of 88 **14.** 36 ÷ 6 **16.** 97 − 51 **17.** 32 ÷ 4 **8.** 61 − 52 **20.** $\frac{1}{8}$ of 16

Changing Fractions to Easier Forms



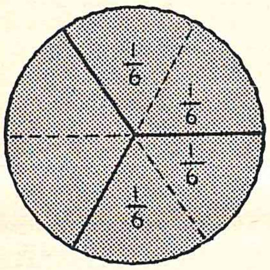
1. At our picnic we want to divide 12 candy bars equally among 8 people. Divide 12 by 8. Each person will get $1\frac{4}{8}$ bars. In the fraction $\frac{4}{8}$, the 4 above the line is the remainder and the 8 below the line is the divisor.

$$\begin{array}{r} 1\frac{4}{8} = 1\frac{1}{2} \\ 8\overline{)12} \\ \underline{8} \\ 4 \end{array}$$

Now look at the candy bar. It is divided into ______ equal parts. Four eighths are the same as what part of the bar? ______ The fraction $\frac{4}{8}$ is equal to the fraction $\frac{1}{2}$, and $\frac{1}{2}$ is easier and simpler than $\frac{4}{8}$. So you may say that each person will get $1\frac{1}{2}$ candy bars.

The picture of the candy bar will help you change each of these fractions to a simpler fraction.

$\frac{2}{8}$ = ______ $\frac{4}{8}$ = ______ $\frac{6}{8}$ = ______ $\frac{2}{4}$ = ______



2. Six boys are to share 22 cookies equally. Divide 22 by 6. Each boy will get $3\frac{4}{6}$ cookies as his share.

The drawing at the left shows that $\frac{4}{6}$ of a cookie is the same as $\frac{2}{3}$ of a cookie. You can say that each boy gets $3\frac{2}{3}$ cookies.

$$\begin{array}{r} 3\frac{4}{6} = 3\frac{2}{3} \\ 6\overline{)22} \\ \underline{18} \\ 4 \end{array}$$

Use the picture to change each of these fractions to a simpler form:

$\frac{2}{6}$ = ______ $\frac{3}{6}$ = ______ $\frac{4}{6}$ = ______

Divide. Change each fraction in the quotient to a simpler form.

	a	*b*	*c*	*d*
3.	$4\overline{)30}$	$6\overline{)20}$	$8\overline{)44}$	$8\overline{)58}$
4.	$6\overline{)81}$	$8\overline{)510}$	$4\overline{)374}$	$6\overline{)328}$
5.	$8\overline{)108}$	$6\overline{)166}$	$8\overline{)274}$	$8\overline{)446}$

Getting Ready for Two-Figure Division

This page will give you practice in skills you will need to work examples on the next pages. Write only the quotients. You need not write the remainders.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
1.	$2\overline{)13}$	$2\overline{)7}$	$3\overline{)14}$	$3\overline{)20}$	$3\overline{)25}$	$4\overline{)6}$	$4\overline{)30}$	$5\overline{)19}$
2.	$5\overline{)47}$	$2\overline{)15}$	$6\overline{)56}$	$3\overline{)23}$	$7\overline{)37}$	$4\overline{)26}$	$8\overline{)67}$	$6\overline{)33}$
3.	$7\overline{)24}$	$5\overline{)22}$	$9\overline{)38}$	$4\overline{)17}$	$3\overline{)17}$	$8\overline{)74}$	$2\overline{)17}$	$9\overline{)56}$

Some of these quotients are too large. Cross them out. Some quotients are too small. Draw a line around them. The rest are correct.

4.	$\overset{4}{8\overline{)30}}$	$\overset{8}{4\overline{)35}}$	$\overset{6}{7\overline{)51}}$	$\overset{5}{9\overline{)42}}$	$\overset{3}{6\overline{)21}}$	$\overset{4}{9\overline{)47}}$	$\overset{7}{5\overline{)38}}$	$\overset{6}{6\overline{)33}}$
5.	$\overset{8}{6\overline{)55}}$	$\overset{4}{4\overline{)19}}$	$\overset{6}{7\overline{)43}}$	$\overset{7}{9\overline{)75}}$	$\overset{8}{3\overline{)22}}$	$\overset{8}{7\overline{)60}}$	$\overset{5}{8\overline{)50}}$	$\overset{8}{9\overline{)65}}$

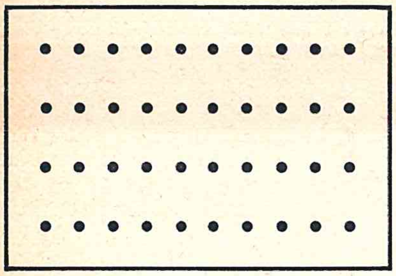
Write only the products.

	a	*b*	*c*	*d*
6.	2 × 35 = ____	2 × 67 = ____	3 × 60 = ____	4 × 82 = ____
7.	5 × 83 = ____	7 × 33 = ____	6 × 96 = ____	9 × 48 = ____
8.	7 × 36 = ____	8 × 64 = ____	2 × 53 = ____	5 × 35 = ____
9.	6 × 42 = ____	3 × 39 = ____	7 × 74 = ____	4 × 68 = ____
10.	8 × 92 = ____	5 × 83 = ____	9 × 34 = ____	6 × 57 = ____

In some of these subtraction examples you cannot subtract. Why? Cross out these examples. Work the rest of the examples.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
11.	$\begin{array}{r}69\\ \underline{70}\end{array}$	$\begin{array}{r}73\\ \underline{60}\end{array}$	$\begin{array}{r}40\\ \underline{34}\end{array}$	$\begin{array}{r}111\\ \underline{99}\end{array}$	$\begin{array}{r}147\\ \underline{128}\end{array}$	$\begin{array}{r}467\\ \underline{472}\end{array}$	$\begin{array}{r}561\\ \underline{489}\end{array}$	$\begin{array}{r}872\\ \underline{893}\end{array}$
12.	$\begin{array}{r}796\\ \underline{747}\end{array}$	$\begin{array}{r}216\\ \underline{216}\end{array}$	$\begin{array}{r}239\\ \underline{276}\end{array}$	$\begin{array}{r}540\\ \underline{486}\end{array}$	$\begin{array}{r}880\\ \underline{892}\end{array}$	$\begin{array}{r}610\\ \underline{560}\end{array}$	$\begin{array}{r}741\\ \underline{830}\end{array}$	$\begin{array}{r}920\\ \underline{918}\end{array}$

Dividing by Tens



1. The dots show 40 radishes Don pulled in his garden. He tied them in bunches, with 10 radishes in each bunch.

To find how many bunches Don had, you could draw a line around each 10 dots. How many 10's in 40? ______

$$\begin{array}{r} 4 \\ 10\overline{)40} \\ \underline{40} \end{array}$$

Or you could **subtract** 10's from 40: 40 − 10 = 30, 30 − 10 = 20, 20 − 10 = 10, 10 − 10 = 0.

How many 10's did you subtract? ______

Or you could **divide** 40 by 10. One ten goes into 4 tens ______ times. 40 ÷ 10 = ______

---

2. Jill has 60 pansy plants to divide equally in baskets for sale. If she puts 20 plants in each basket, how many baskets will she need?

To find out, divide 60 by 20. Think: 6 tens divided by 2 tens = ______.

Finish the division. How many 20's in 60? ______

$$\begin{array}{r} 3 \\ 20\overline{)60} \\ \underline{60} \end{array}$$

Divide. Think of tens divided by tens.

	a	*b*	*c*	*d*	*e*
3.	$10\overline{)60}$	$10\overline{)30}$	$10\overline{)80}$	$20\overline{)80}$	$20\overline{)40}$
4.	$\begin{array}{r} 7 \\ 20\overline{)140} \\ \underline{140} \end{array}$	$20\overline{)100}$	$20\overline{)180}$	$20\overline{)160}$	$20\overline{)120}$
5.	$30\overline{)120}$	$30\overline{)210}$	$30\overline{)270}$	$40\overline{)240}$	$50\overline{)150}$
6.	$80\overline{)160}$	$60\overline{)360}$	$50\overline{)200}$	$60\overline{)300}$	$90\overline{)360}$
7.	$70\overline{)420}$	$70\overline{)210}$	$80\overline{)240}$	$90\overline{)810}$	$60\overline{)120}$
8.	$70\overline{)350}$	$60\overline{)540}$	$50\overline{)400}$	$80\overline{)720}$	$80\overline{)480}$

Dividing by Two-Figure Numbers

1. Our car will go 21 miles on a gallon of gasoline. To find how many gallons we shall need for a trip of 105 miles, divide 105 by 21.

Think: 21 is about 2 tens. 105 is about 10 tens. 10 ÷ 2 = 5. This figure 2 is called the **trial divisor.** The figure 5 is called the **trial quotient.**

Write 5 over the 5 in 105. Multiply 5 × 21, and write the product under the 105. There is no remainder. Your trial quotient was the right quotient. How many gallons of gasoline will we need? ______

$21\overline{)105}$

Divide. Think how many tens you are dividing, and about how many tens you are dividing by.

	a	*b*	*c*	*d*	*e*
2.	$21\overline{)42}$	$21\overline{)84}$	$11\overline{)77}$	$43\overline{)86}$	$34\overline{)68}$
3.	$\begin{array}{r} 8 \\ 31\overline{)248} \\ \underline{248} \end{array}$	$21\overline{)147}$	$51\overline{)204}$	$62\overline{)124}$	$41\overline{)123}$
4.	$52\overline{)156}$	$21\overline{)189}$	$61\overline{)427}$	$72\overline{)288}$	$83\overline{)249}$
5.	$92\overline{)368}$	$51\overline{)306}$	$93\overline{)186}$	$73\overline{)219}$	$41\overline{)369}$
6.	$\begin{array}{r} 7 \\ 22\overline{)154} \\ \underline{154} \end{array}$	$23\overline{)92}$	$35\overline{)70}$	$24\overline{)96}$	$29\overline{)58}$
7.	$53\overline{)318}$	$22\overline{)176}$	$43\overline{)301}$	$74\overline{)592}$	$39\overline{)117}$
8.	$56\overline{)392}$	$87\overline{)609}$	$59\overline{)295}$	$72\overline{)360}$	$96\overline{)864}$

Have you written all your quotients in the right place?

Division With Remainders

$$\begin{array}{r} 4\text{ r }12 \\ 33\overline{)\,144} \\ \underline{132} \\ 12 \end{array}$$

1. There are 33 people at our class party. We have 144 small sandwiches. How many sandwiches may each person have?

When you divide 144 by 33, think: How many times will 3 tens go into 14 tens? 14 ÷ 3 = 4. Then 4 is your trial quotient. Multiply 33 by 4. 4 × 33 = ______. Subtract this number from 144. How much is left? Is this remainder smaller than your divisor?

Each person's share is ______ sandwiches, with ______ sandwiches left over.

Divide. Be sure that the remainder is never larger than your divisor.

	a	*b*	*c*	*d*	*e*
2.	$30\overline{)96}$	$10\overline{)47}$	$20\overline{)82}$	$40\overline{)92}$	$20\overline{)50}$
3.	$40\overline{)126}$	$30\overline{)219}$	$50\overline{)314}$	$80\overline{)580}$	$60\overline{)505}$
4.	$23\overline{)49}$	$32\overline{)70}$	$41\overline{)96}$	$24\overline{)76}$	$11\overline{)69}$
5.	$41\overline{)374}$	$63\overline{)207}$	$52\overline{)110}$	$91\overline{)406}$	$72\overline{)245}$
6.	$34\overline{)175}$	$82\overline{)521}$	$53\overline{)295}$	$42\overline{)261}$	$95\overline{)500}$
7.	$61\overline{)499}$	$94\overline{)608}$	$47\overline{)239}$	$73\overline{)539}$	$84\overline{)380}$

Checking Division

1. Jerry has 75 cents. He wants to buy some picture puzzles costing 20¢ each. To find how many he can buy, divide 75 by 20.

______ tens will go into 7 tens ______ times. Multiply 20 by this number, and subtract from 75. Jerry can buy

______ puzzles. He will have ______¢ left.

$$\begin{array}{r} 3\text{ r }15 \\ 20\overline{)75} \\ 60 \\ \hline 15 \end{array} \qquad \begin{array}{r} 20 \\ 3 \\ \hline 60 \\ 15 \\ \hline \end{array}$$

To check, multiply 3 × 20¢ (what he will pay for the puzzles) and add 15¢ (the money he will have left). Does the sum equal the money he has now?

Divide and check.

	a	Check	*b*	Check	*c*	Check
2.	$30\overline{)240}$		$20\overline{)140}$		$31\overline{)186}$	
3.	$50\overline{)255}$		$30\overline{)178}$		$41\overline{)137}$	
4.	$63\overline{)342}$		$84\overline{)375}$		$75\overline{)402}$	
5.	$96\overline{)888}$		$73\overline{)310}$		$67\overline{)231}$	

Multiply or Divide?

Decide whether you will multiply or divide before you work each problem.

1. Jerry collects stamps. He has 72 stamps to put in his trading album. If he puts 24 stamps on a page, how many pages will he fill?

M

2. We need 180 paper cups for our school Christmas party. We can buy 20 cups in a carton. How many cartons must we buy?

D

3. Mr. Preston's large car goes 13 miles on a gallon of gasoline. Last month he bought 91 gallons of gasoline for the car. How many miles did the car go last month?

D

4. Don and his father have 250 strawberry plants to set out. If they put 50 plants in a row, how many rows will they have?

M

5. Don found that a large basket of apples held 96 apples and a small basket held only 24 apples. How many times as many apples did the large basket hold?

M

6. Mrs. Lane wants to buy 15 boxes of strawberries to make jam. At 45¢ a box, how much must she pay?

M

7. The school band has 500 handbills about their concert to distribute. If 10 boys agree to distribute the handbills, how many should each boy take?

D

8. One week Bob's hens laid 84 eggs. How many dozen eggs was this?

D

9. Larry's club bought 20 magazines at 10 cents a copy. What was the total cost?

M

10. The Lanes used 8 gallons of gasoline to drive to the seashore for their vacation. The distance was 176 miles. How many miles did they get per gallon?

D

11. Nora wants to find how many words there are on each page of her book. There are 33 lines per page, with about 11 words on each line. About how many words per page is this?

M

12. Bill has 75 cents. He wants to buy some toy trucks costing 25 cents each. How many trucks can he buy?

D

13. Jean has saved 70 pennies. She wants to change them to dimes to put in her dime bank. How many dimes can she get?

D

14. If an airplane flies 195 miles an hour on the average, how many miles will it fly in 15 hours?

D

Are all your answers **reasonable?**

Which Numbers Do You Use?

In each of these problems, there is an extra number you do not need to solve the problem. Decide which numbers you must use, and then work the problem. Write your answers in the blanks.

1. Don picked 19 ears of corn from one row in his garden and 17 ears from another row. He sold the corn for 4 cents an ear. How many ears of corn did Don pick?

19
17
36

36

2. One morning we drove 78 miles. That afternoon we drove 89 miles. The whole trip took 5 hours. How many miles did we drive?

78
89
167

167

3. Linda weighs 75 pounds. Her brother weighs 96 pounds. Their father weighs 174 pounds. How much do Linda and her brother weigh together?

75
96
171

171

4. Our baseball team has played 5 games. In these games, we made the following numbers of runs: first game, 8; second, 0; third, 6; fourth, 14; fifth, 9. How many runs have we made in all?

36

5. An airplane took off at 7 a.m. It flew 760 miles and landed at 11 a.m. How many hours did it fly?

4

6. Jean and her brother Tony are saving for a radio costing $17.50. Tony has saved $7.28 and Jean has saved $6.75. How much have they saved together?

7.28
6.75
14.03

14.03

7. Eggs are worth 59¢ a dozen, and Bob has 108 eggs to sell. How many dozen eggs has Bob?

9
12)108

9

8. Sue made a large pan of fudge. She cut it into 5 rows with 12 pieces in each row. She gave away 15 pieces of the fudge. How many pieces of fudge did Sue make?

12
×5
60

60

9. Allen bought three rolls of film costing 35¢ each. He gave the clerk a dollar and a quarter. How much did the films cost?

1.05

10. Tom had 196 inches of track for his electric train. Then he got 12 pieces of track for his birthday. Each piece was 11 inches long. How many inches of track did Tom get for his birthday?

196
+12
208

208

11. Peggy bought 3 tennis balls costing 65¢ each, and a tennis racket costing $4.98. How much did she pay for the tennis balls?

4.98
65
5.63

563

12. Nine boys and 8 girls came to Ellen's party. Ellen's mother took all of them to the movies. The tickets cost 25¢ each. How many children were at the party? (Don't forget Ellen!)

18

13. Don's father is starting a new peach orchard. He has planted 96 trees in 6 equal rows. He still has 5 more trees to plant. How many trees did he put in each row?

396
×6
576

576

Two Problems in One

In each of these problems, two questions are asked. You must answer the first question before you can answer the second question. There really are two problems in each problem. Work the two parts of each problem in the boxes at the right. Write your **two** answers in the blanks after the problems.

1. Jill picked 60 flowers. She tied them into bunches with 12 flowers in each bunch. How many bunches did she have? She sold the flowers for 15 cents a bunch. How much did Jill get for all the flowers? 12 ×15 70 120 190 *a* 12 *b* 1.90	*a.*	*b.*
2. Ellen bought 18 favors for her party. They cost 5 cents each. How much did all the favors cost? Ellen gave the clerk a dollar bill. How much change did she get? 18 ×5 90 *a* 90 *b* 10	*a.*	*b.*
3. Jim and Jerry earned $1.35 and 95 cents for cutting two lawns. How much did they earn in all? The boys agreed to divide the money equally. How much did each boy get? 1.35 + 95 2.30 *a* 2.30 *b* 1.15	*a.*	*b.*
4. Dave counted 32 passengers in the bus. Then 7 people got off the bus. How many were left in the bus? At the next stop, 11 more people got on. How many passengers were there in the bus then? 32 25 7 11 25 14 *a* 25 *b* 14	*a.*	*b.*
5. Jean and her brother Tony went on a 1050 mile trip with their father. The first day they drove 386 miles. The second day they drove 348 miles. How many miles did they drive in these two days? How many miles did they still have to drive? 386 1050 348 1034 1034 16 *a* 1034 *b* 16	*a.*	*b.*
6. Mrs. Lane spent 56 cents for apples, 75 cents for oranges, and $1.09 for meat. How much did she spend for fruit? How much more did she spend for fruit than for meat? 56 1.31 75 109 131 22 *a* 1.31 *b* .22	*a.*	*b.*
7. On a three-day trip, we spent $8.40 for gasoline. How much did we spend for gasoline each day on an average? Our other expenses were $7.60 a day. How much did our trip cost for each day? 8.40 2 80 3)8 40 6 24 *a* 2 80 *b* 10.40 7.60 10 40	*a.*	*b.*

Finding the Hidden Question

In each of these problems you must answer **two** questions. The first question is hidden in the problem. You must answer the hidden question before you can answer the written question. For instance, in Problem 1 you must think, "How much did both pictures cost?"

Before you work each problem, find the hidden question. Then work the two steps in the boxes, and write the second answer in the blank after the problem.

1. Jean's family gave her $10 for her birthday. Jean bought two pictures for her room. One cost $4.35 and the other cost $2.90. How much of her birthday money did Jean have left? 4.35 2.90 7.25 7.25 10.00 7.25 2.75 *b* $2.75	*a.*	*b.*
2. Sam has 95 cents. He wants to buy a fishing pole that costs 75 cents and a line that costs 48 cents. How much money does Sam still need? 75 +48 123 123 95 27 *b* 27¢	*a.*	*b.*
3. Don has 13 tomato plants in one row of his garden and 9 plants in another row. If each plant gives an average of 12 tomatoes, how many tomatoes will Don get? 22 *b* 312	*a.*	*b.*
4. On a fishing trip, Sam caught 8 fish, Bob caught 9 fish, Don caught 9 fish, and Don's friend Ben caught 6. The boys shared the fish equally. How many fish did each boy get? 32 8 *b* 8	*a.*	*b.*
5. Dave weighs 99 pounds. His sister weighs 77 pounds. Their mother weighs 128 pounds. How much more than their mother do Dave and his sister together weigh? 99 77 176 176 128 48 *b* 48	*a.*	*b.*
6. Jean had 39 pennies. Her uncle gave her 11 more pennies. Jean wants to change her pennies into nickels for her nickel bank. How many nickels will she get? *b* 10	*a.*	*b.*
7. Jill picked 43 roses this morning. She kept 19 of them to make a bouquet, and wants to tie the rest in three equal bunches. How many roses should she put in each bunch? 43 −19 24 *b* 8	*a.*	*b.*

Page 134 provides enrichment material which can be used to extend concepts so far introduced.

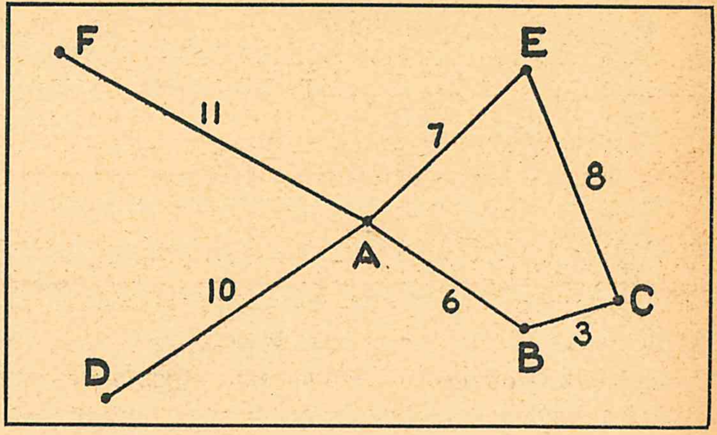
Can You Find the Average?

1. Mr. Lane bought 4 neckties. He paid 95¢ for one, $2.50 for another, $1.75 for another, and $2.00 for the fourth. How much, on the **average,** did he pay for his ties? To find the average price of several things, first **add** to find the total price. Then **divide** the total price by the number of things. The average price of the neckties was ______.	$ .95 2.50 1.75 2.00	
2. Bob's hens laid 9 eggs on Monday, 14 eggs on Tuesday, and 13 eggs on Wednesday. How many eggs a day did they lay, on the average? 12 3)36 12	*a.*	*b.*
3. Joe practices on his trumpet every day. In four days he has practiced 25 minutes, 40 minutes, 18 minutes, and 17 minutes. How many minutes a day has he practiced on the average? 23 3 4)95 23	*a.* 40 25 18 17 95	*b.*
4. In the five school days this week, Ann has spent for her lunches 35 cents, 28 cents, 30 cents, 29 cents, and 13 cents. Find the average cost of her lunches. 27 5)135 10 35 15 27	*a.*	*b.*
5. Three boys are 56 inches tall, 63 inches tall, and 55 inches tall. What is their average height? 58 3)174 15 24 58	*a.* 56 63 55 174	*b.*
6. A basketball team has played four games. They scored 27 points in the first game, 44 in the second, 32 in the third, and 53 in the fourth. How many points did they average per game? 39 4)157 39	*a.* 27 44 32 53 157	*b.*
7. On a three-day trip, the Lanes drove 385 miles the first day, 366 miles the second day, and 408 miles the third day. How many miles a day did they average? 12 386 3)1159 9 25 24 386	*a.* 385 366 408 1159	*b.*
8. Bob sold four chickens for $1.75, 97¢, $2.00, and $1.80. Find the average price for all four chickens. 163 4)652 4 25 24 12 163	*a.* 1.75 .97 2.00 1.80	*b.* 375 +180 97 652

Page 135 provides enrichment material which can be used to extend concepts so far introduced.

Using a Road Map

Here is a part of a road map. The towns on the map are marked A, B, C, D, E, and F. The numbers show the number of miles between the towns. In the questions below, just write the answers.



1. How many miles is it from D to E? 17

2. How many miles from D to F? 21

3. How far is it from D to C? 19

From F to C? 20

9 11

4. How many miles farther is it from A to C going through E than going through B? 2

Here is a part of a mileage table on the back of a road map. It shows the number of miles between different towns on the map. From Town J to Town L is 116 miles; from Town L to Town J is also 116 miles.

Use the table to find the number of miles from:

	Town G	Town H	Town J	Town K	Town L	Town M	Town N
Town G		57	124	40	89	160	16
Town H	57		96	108	35	63	42
Town J	124	96		82	⑪⑥ 116	70	81
Town K	40	108	82		77	130	48
Town L	89	35	116	77		111	54
Town M	160	63	70	130	111		79
Town N	16	42	81	48	54	79	

5. Town G to Town H. 57

6. Town G to Town M. 160

7. Town H to Town J. 96

8. Town H to Town N. 42

9. Town J to Town G. 124

10. Town J to Town K. 82

11. Town K to Town M. 130

12. Town M to Town L. 111

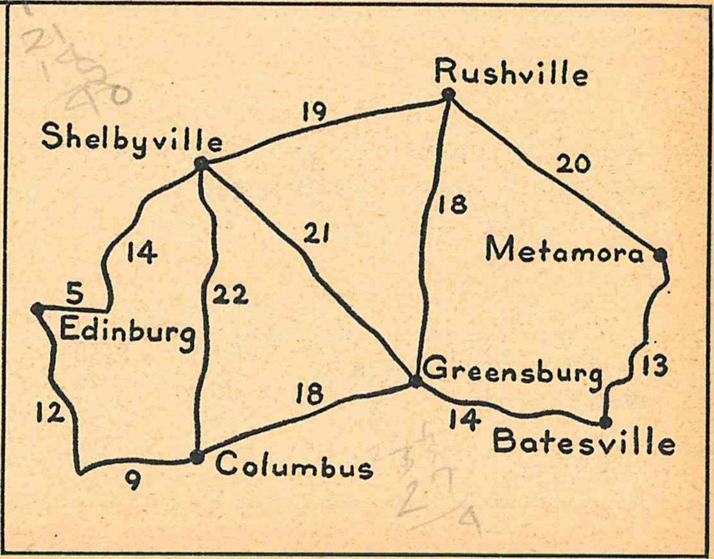
13. Town N to Town M. 79

14. Town L to Town K. 77

15. Town K to Town N. 48

16. Town M to Town J. 70

Here is part of a road map.



17. How much farther is it from Rushville to Batesville through Metamora than through Greensburg? 4

18. How much shorter is it from Rushville to Columbus if you go through Greensburg than if you go through Shelbyville and Edinburg? 4 34

19. From Shelbyville to Metamora is how many miles by the shortest route? 39

Using Two-Step Problems at the Store

1. Sally's mother sent her to the store with a dollar to buy 10 pounds of sugar. If the sugar cost 9 cents a pound, how much change did Sally get? 10¢	*a.*	*b.*
2. The price of baseballs was reduced from $2.15 to $1.89. Bill bought 4 baseballs for his team. How much did he save in all? 1.89 × 4 2.15 − 1.89 16 60¢	*a.*	*b.*
3. Ann bought a bracelet for 98¢ and a necklace for $2.25. She paid for them with a five-dollar bill. How much change did she get? 5.00 − 3.23 1.86	*a.* 2.25 98 3.23	*b.*
4. Jean bought 8 colored pencils for 12 cents each and a scrap-book costing 75¢. How much did she spend in all? 12 × 8 96 75 96 171 1.71	*a.*	*b.*
5. Tickets to the circus cost $1.25 each. A reserved seat costs 50 cents extra. How much must we pay for five tickets with reserved seats? 1.75 × 5 8.75 8.75	*a.*	*b.*
6. Tom wants a new engine costing $6.48 for his electric train, and 18 pieces of track at 20 cents for each piece. How much must he pay for both the engine and track? 10.08	*a.* 6.48 3.60 10.08	*b.*
7. Jean's brother Tony bought three neckties at 75¢ apiece and a pair of shoes for $6.50. How much more did he pay for the shoes than for the three neckties? 4.25	*a.*	*b.*
8. Jerry's father told Jerry he had just bought a television set. He paid $100 down and was to pay the rest in 9 payments of $21 each. How much did the set cost in all? 289	*a.* 21 × 9 189	*b.*
9. Mr. Lane needs four new tires and tubes for his car. Each tire costs $14.36 and each tube costs $3.79. How much must Mr. Lane pay for all his tires and tubes? (There are two ways of solving this problem. Can you work it the shorter way?) 57.44 15.16 72.60 72.60	*a.* 14.36 × 4 57.44	*b.* 3.79 × 4 15.16

Keeping Records

Sally helps her mother keep a record of the money spent for food in their family. Here is the record for three weeks.

	First Week	Second Week	Third Week	Totals
Milk and eggs	$ 5.48	$ 4.28	$ 5.02	29.40
Groceries	15.74	17.17	14.43	26.91
Meat	8.17	4.96	9.21	28.66
Totals	2940	2641	28.66	8447

There are seven blanks to fill. Add to find the cost of:

1. Food for the first week. 29.90

2. Food for the second week. 26.91

3. Food for the third week. 28.66

4. All the milk and eggs. 14.78

5. All the groceries. 47.54

6. All the meat. 21.39

15.74
17.17
14.43
47.54

7. All the food for 3 weeks. 84.47 You can find this total by adding in two ways. If your work is correct, both sums should be the same.

Use the answers to Problems 1 to 7 in working Problems 8 to 13.

8. How much more did Sally's family spend for food the first week than the second week? 3.01

9. In the 3 weeks, how much more did they spend for meat than for eggs and milk? 6.61

10. How much less did they spend for meat than for groceries? 26.15

11. On the average, how much a week did they spend for groceries? 25

12. How much a week did they spend on the average for meat? 6.00

13. There are 4 persons in Sally's family. How much did all the food cost for each person? 19.00

21.39
28.39
14.78
16.61

---

14. On Monday, Mrs. Lane spent $1.50 for milk and eggs. On Tuesday, she spent $1.25 for meat, and $2.50 for groceries. On Wednesday she spent $1.02 for milk and $2.00 for meat. On Thursday she spent $3.50 for groceries. On Friday she spent $1.85 for milk and eggs, 98¢ for meat, and $2.05 for groceries. On Saturday she spent $4.84 for groceries and $3.50 for meat.

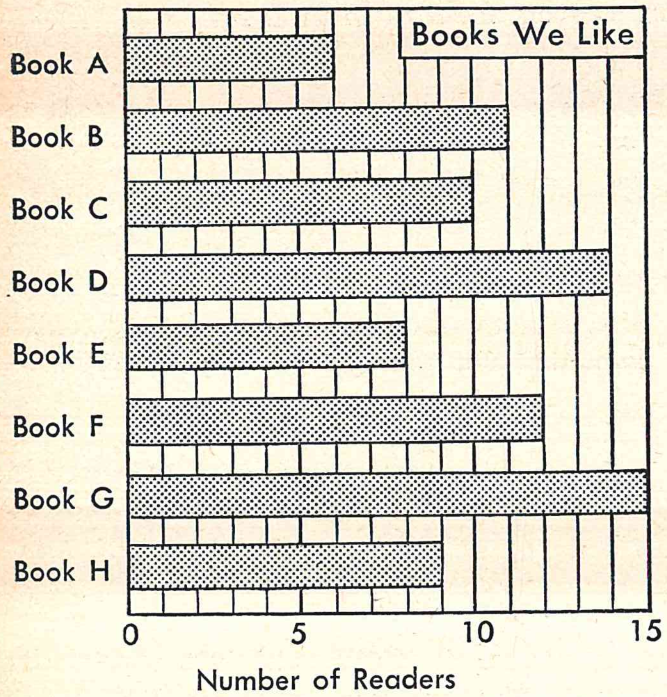
Use the blanks to the right to put down what she spent.

Milk and eggs	Groceries	Meat
1.50	2.50	1.25
1.02	3.50	2.00
1.85	2.05	98
4.37	4.89	3.50
	11.89	8.33
11.89 4.37 16.20	24.26 8.33 34.59	

15. How much did Mrs. Lane spend in all for meat? 8.33 Groceries? 11.89 Milk and eggs? 4.37 Everything together? 34.58

Page 136 provides enrichment material which can be used to extend concepts so far introduced.

Using Bar Graphs



Nora made this **bar graph** to show how popular some of the books in her classroom library are. At the side of the graph, she wrote the names of the 8 books the boys and girls in the class liked best. At the bottom of the chart she put a **number scale.** The numbers ran from 0 to 15. Beside the name of each book, Nora drew a bar to show how many people in the class had read it.

1. Can you read Nora's graph? After each letter below, write the number of people who had read and liked the book.

A 6 B 11 C 10 D 14

E 8 F 12 G 15 H 9

2. Which book was most popular? G

Which was least popular? A

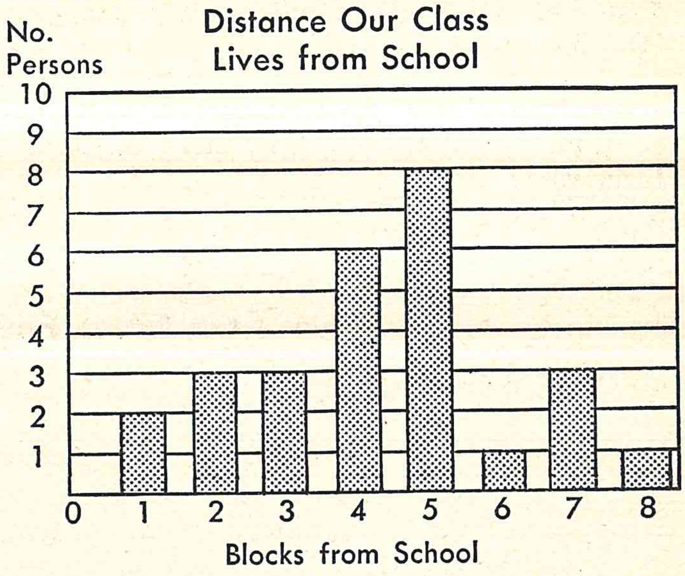
Tom made a graph to show how far the boys and girls in his class lived from school. The numbers up the side of the graph show numbers of people. The numbers underneath the graph show the number of blocks away from the school.

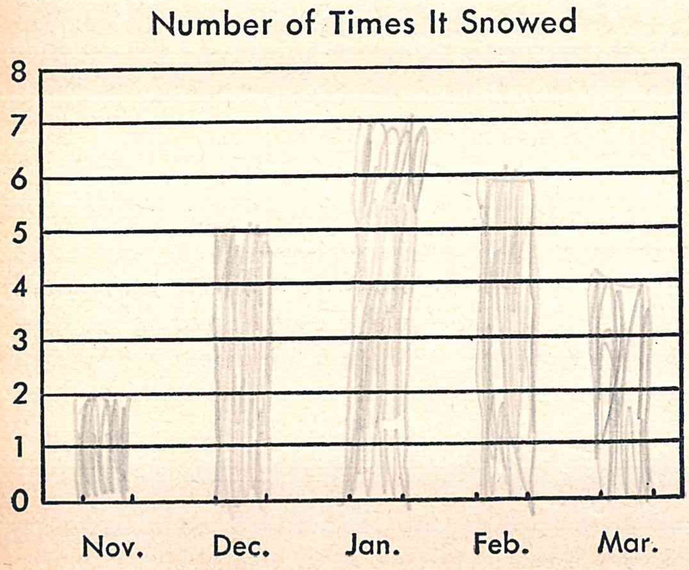
3. The graph shows that 2 pupils in the class live only 1 block from school. How many pupils live:

2 blocks away? 3 3 blocks away? 3

5 blocks away? 8 7 blocks away? 3

4. How many pupils lived 5 blocks away or less? 17 How many lived more than 5 blocks away? 0





5. Last year Bob kept a record of the number of times it snowed. The following table shows the months in which snow fell, and the number of times each month.

November	2
December	5
January	7
February	6
March	4

Turn this table into a bar graph, in the space to the left.

6. How many times did it snow? 24

7. Which two months were the snowiest?

Jan, Fel

Two-Step Quickies

These problems are two-step problems, but you can do them in your head. Just write the answers.

1. Bill had 20 marbles. Then he bought 5¢ worth of marbles at 2 for a cent. How many marbles did he have then? ______

2. Linda is 54 inches tall. If she grows 2 inches a year for the next 3 years, how tall will she be three years from now? ______

3. Jill picked 24 flowers. She tied them in bunches with 8 flowers in each bunch, and sold the bunches for 10¢ apiece. How much did she get for all the flowers? ______

4. Ellen wants to buy 20 paper hat snappers for her party. How much more will she have to pay if she buys 10¢ snappers instead of 8¢ snappers? (Do this the shorter way.) ______

5. Apples are 2 for 5¢. How many apples can Jerry get for 10¢? ______

6. Nora has read 6 pages of her book in 24 minutes. At this rate, how many minutes will it take her to read the next 8 pages? ______

7. In three games, Bill's baseball team made 4 runs, 0 runs, and 8 runs. How many runs per game did they average? ______

8. Don sold 3 cucumbers for 5¢ each and a bunch of beets for 10¢. How much did he get for both? ______

9. Sue made 18 cookies. She gave 2 cookies each to Sam, Bob, and Don. How many cookies did she have left? ______

10. Peggy bought some jacks for 5¢ and a rubber ball for 3¢. She gave the clerk a dime. How much change did she get? ______

Can You Find Fractions of Measures?

Fill the blanks below.

1. $\frac{1}{2}$ pound = ______ ounces

2. $\frac{1}{2}$ hour = ______ minutes

3. $\frac{1}{2}$ gallon = ______ quarts

4. $\frac{1}{2}$ year = ______ months

5. $\frac{1}{2}$ day = ______ hours

6. $\frac{1}{4}$ yard = ______ inches

7. $\frac{1}{4}$ dozen = ______ things

8. $\frac{1}{4}$ bushel = ______ quarts

9. $\frac{1}{4}$ pound = ______ oz.

10. $\frac{3}{4}$ pound = ______ oz.

11. $\frac{1}{4}$ foot = ______ inches

12. $\frac{3}{4}$ foot = ______ inches

13. $\frac{1}{4}$ hour = ______ min.

14. $\frac{3}{4}$ hr. = ______ min.

15. $\frac{1}{3}$ doz. = ______ things

16. $\frac{2}{3}$ doz. = ______ things

17. $\frac{1}{3}$ min. = ______ sec.

18. $\frac{2}{3}$ min. = ______ sec.

19. A recipe calls for a pint of milk. How many measuring cups is this? ______

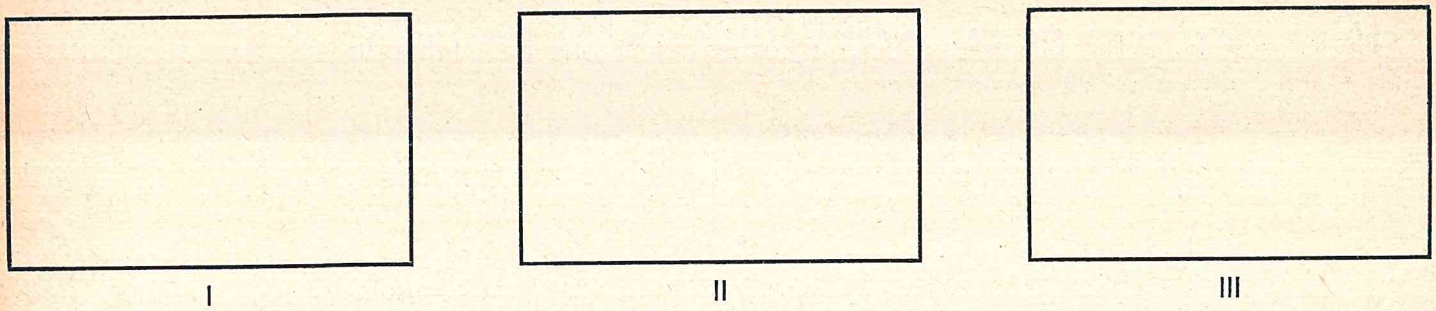
20. Sue wants to measure out a gallon of tomato juice. How many times must she fill a pint measure? ______

21. Dick wants to measure 3 yards. He has only a foot rule. How many times must he measure with it? ______

22. How many inches is $\frac{1}{2}$ of a yard? ______

$\frac{1}{3}$ of a yard? ______ $\frac{1}{4}$ of a yard? ______

Understanding Fractions



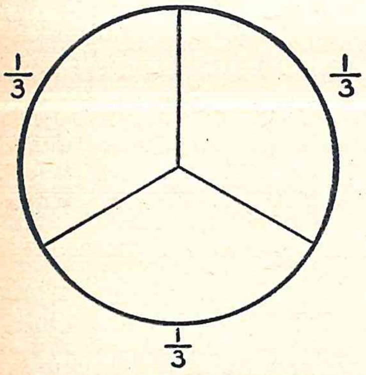
1. The three rectangles above are all the same size. Divide Rectangle I into **halves.** Divide Rectangle II into **fourths.** Divide Rectangle III into **eighths.** In each rectangle, write the fraction ($\frac{1}{2}$, or $\frac{1}{4}$, or $\frac{1}{8}$) that belongs in each part.

Now write the missing fractions in the blanks below.

	a	*b*	*c*
2.	$\frac{1}{2} +$ ____ $= 1$	$\frac{3}{4} +$ ____ $= 1$	$\frac{1}{4} +$ ____ $= 1$
3.	$\frac{1}{8} +$ ____ $= 1$	$\frac{7}{8} +$ ____ $= 1$	$\frac{3}{8} +$ ____ $= 1$

Look at the three rectangles above. Finish writing these fractions.

	a	*b*	*c*	*d*
4.	$\frac{1}{2} = \frac{\quad}{4}$	$\frac{1}{4} = \frac{\quad}{8}$	$\frac{1}{2} = \frac{\quad}{8}$	$\frac{3}{4} = \frac{\quad}{8}$
5.	$\frac{2}{4} = \frac{\quad}{2}$	$\frac{2}{8} = \frac{\quad}{4}$	$\frac{4}{8} = \frac{\quad}{2}$	$\frac{6}{8} = \frac{\quad}{4}$



6. The circle at the left is divided into **thirds.** Draw three lines to divide the circle into **sixths.** Write $\frac{1}{6}$ in each of the 6 parts.

Fill the blanks below.

	a	*b*	*c*	*d*
7.	$\frac{1}{3} +$ ____ $= 1$	$\frac{2}{3} +$ ____ $= 1$	$\frac{1}{6} +$ ____ $= 1$	$\frac{5}{6} +$ ____ $= 1$
8.	$\frac{1}{3} = \frac{\quad}{6}$	$\frac{2}{6} = \frac{\quad}{3}$	$\frac{2}{3} = \frac{\quad}{6}$	$\frac{4}{6} = \frac{\quad}{3}$

9. How many sixths are there in half the circle? ____ $\frac{1}{2} = \frac{\quad}{6}$

Look at the rectangles. Draw a line around the **larger** fraction in each pair.

	a	*b*	*c*	*d*	*e*
10.	$\frac{1}{4}$ or $\frac{1}{2}$	$\frac{1}{4}$ or $\frac{1}{8}$	$\frac{3}{8}$ or $\frac{1}{4}$	$\frac{1}{2}$ or $\frac{5}{8}$	$\frac{3}{4}$ or $\frac{7}{8}$

11. Which fraction is the largest: $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$? ____

Look at the circle. Draw a line around the larger fraction in each pair.

	a	*b*	*c*	*d*	*e*
12.	$\frac{1}{2}$ or $\frac{1}{3}$	$\frac{1}{3}$ or $\frac{1}{6}$	$\frac{1}{3}$ or $\frac{2}{3}$	$\frac{1}{2}$ or $\frac{5}{6}$	$\frac{2}{3}$ or $\frac{5}{6}$

13. Which fraction is largest: $\frac{1}{2}$, $\frac{1}{3}$, or $\frac{1}{6}$? ____

14. If $\frac{1}{2} = \frac{3}{6}$ and $\frac{1}{2} = \frac{2}{4}$, which is larger, $\frac{1}{6}$ or $\frac{1}{4}$? ____

Test pages 3 and 4 are to be given following completion of this page.

Division With Two-Figure Quotients

1. Nora's new book has 325 pages. If Nora can read 25 pages an hour, find how many hours it will take her to read the book. **Divide** 325 by 25.

First divide 32 by 25. There are 4 steps.

1) **Divide** 3, the first figure of your dividend, by 2, the first figure of your divisor. 3 ÷ 2 = ______, with 1 over. The figure you get becomes your **trial quotient.** Since you are going to have another quotient figure, write the first trial quotient in the tens place.

2) **Multiply** your divisor by your trial quotient. 1 × 25 = ______.

3) **Subtract.** 32 − 25 = ______.

4) **Bring down.** Write 5 after ______.

There are only 2 steps in finding the second figure of the quotient. Where is the 3 written?

Check by multiplying. 25 × 13 = ______.

$$\begin{array}{r} 13 \\ 25\overline{)325} \\ \underline{25} \\ 75 \\ \underline{75} \end{array}$$

Check

$$\begin{array}{r} 25 \\ \underline{13} \end{array}$$

Divide and check your answers.

	a	*b*	*c*	*d*	*e*
2.	$12\overline{)144}$	$24\overline{)288}$	$11\overline{)198}$	$32\overline{)384}$	$21\overline{)294}$
3.	$24\overline{)552}$	$32\overline{)672}$	$23\overline{)322}$	$37\overline{)777}$	$44\overline{)924}$
4.	$22\overline{)946}$	$33\overline{)726}$	$46\overline{)966}$	$24\overline{)768}$	$39\overline{)819}$
5.	$47\overline{)987}$	$25\overline{)575}$	$62\overline{)868}$	$37\overline{)851}$	$32\overline{)736}$

Dividing Four-Figure Numbers

$$\begin{array}{r} 3 \\ 35\overline{)1190} \\ \underline{105} \end{array}$$

Check

1. The Lanes are planning to take a 1190-mile vacation trip. Mr. Lane thinks they will average about 35 miles an hour. How many hours will they spend in driving?

Finish the division started at the left. 11 ÷ 3 = 3. Since 3 × 35 will give a three-figure product, you must write the 3 in the tens place, above the 9.

The Lanes will drive ______ hours. Check your work by multiplying.

Divide. Check your answers.

	a	*b*	*c*	*d*	*e*
2.	$34\overline{)1768}$	$36\overline{)1152}$	$43\overline{)1118}$	$38\overline{)1178}$	$54\overline{)1404}$
3.	$65\overline{)2795}$	$42\overline{)1470}$	$74\overline{)3034}$	$83\overline{)2158}$	$47\overline{)1504}$
4.	$54\overline{)1890}$	$94\overline{)5828}$	$72\overline{)3096}$	$64\overline{)4672}$	$51\overline{)4182}$
5.	$83\overline{)7968}$	$46\overline{)2392}$	$94\overline{)3196}$	$73\overline{)3942}$	$57\overline{)1368}$
6.	$86\overline{)3612}$	$46\overline{)3634}$	$82\overline{)5248}$	$77\overline{)4081}$	$61\overline{)5002}$

Quotients Ending in Zero

1. A fast train went 1150 miles in 23 hours. To find how many miles an hour it averaged, divide 1150 by 23.

11 ÷ 2 = 5; 5 × 23 = 115. The 5 in the quotient goes over the 5 in the dividend.

You must still bring down the 0 in the dividend, and there must be a figure in the ones place in the quotient. 0 ÷ 23 = 0. The train averaged 50 miles an hour.

Check your work by multiplying.

$$\begin{array}{r} 50 \\ 23\overline{)1150} \\ 115 \\ \hline 0 \end{array}$$

Check

$$\begin{array}{r} 23 \\ 50 \\ \hline \end{array}$$

Divide. Check your answers.

	a	*b*	*c*	*d*	*e*
2.	12)480	12)360	23)920	26)520	24)720
3.	32)1280	43)1720	43)2580	62)4960	54)3780
4.	40 30)1200 120 0	70)4200	90)6300	40)2000	50)3000

Division With a Remainder

There are remainders in the following examples. When you check, remember to add the remainder.

1.	30*r*12 64)1932 192 12	34)2046	43)3036	64)3240	66)1667
2.	95)3850	52)4179	85)5150	76)6120	57)1944
3.	73)1900	94)2200	62)5586	83)4410	85)3763

Three-Figure Quotients

$$\begin{array}{r} 14 \\ 32\overline{)4640} \\ \underline{32} \\ 144 \end{array}$$

Check

1. The owner of a small airplane says that last month he flew a total of 4640 miles. He was in the air 32 hours. How many miles an hour did he average?

To find out, you divide 4640 by 32. The division is started for you at the left. It is done just like other division, except that you must bring down figures from the dividend twice instead of once. Finish the work and check.

The airplane averaged ______ miles per hour.

Divide. Check your answers.

	a	*b*	*c*	*d*
2.	$12\overline{)1488}$	$43\overline{)5676}$	$34\overline{)7956}$	$23\overline{)7268}$
3.	$54\overline{)8208}$	$73\overline{)54166}$	$64\overline{)52800}$	$32\overline{)26912}$
4.	$87\overline{)79518}$	$75\overline{)46125}$	$94\overline{)59690}$	$55\overline{)17270}$
5.	$85\overline{)61880}$	$93\overline{)39525}$	$97\overline{)80122}$	$84\overline{)53340}$

Page 137 provides enrichment material which can be used to extend concepts so far introduced.

Zeros in the Quotient

1. Last month Mr. Lane drove his car 2289 miles. His car goes about 21 miles on a gallon of gasoline. Mr. Lane wanted to find out how many gallons of gasoline he had used, and so he divided 2289 by 21.

Finish the division at the right. What do you do when you find that the divisor 21 won't go into 18? Check your answer.

Mr. Lane had used ______ gallons of gasoline.

10 21)2289 21 18	*Check*

Divide, and check your answers.

	a	*b*	*c*	*d*
2.	23)6992	36)7344	25)7550	41)8528
3.	74)15392	50)15400	84)42588	60)54240
4.	53)22260	35)7000	87)18096	93)59520
5.	22)4908	43)1731	74)2250	31)6840
6.	56)6048	25)5006	45)9027	94)19500

Practice in Division

These examples will show you how much you have learned about division. Check your work.

	a	*b*	*c*	*d*
1.	$32\overline{)992}$	$42\overline{)966}$	$21\overline{)882}$	$64\overline{)832}$
2.	$43\overline{)2236}$	$71\overline{)5893}$	$54\overline{)3294}$	$82\overline{)6396}$
3.	$63\overline{)4410}$	$40\overline{)3200}$	$33\overline{)2331}$	$72\overline{)2600}$
4.	$43\overline{)26574}$	$62\overline{)58590}$	$94\overline{)57152}$	$53\overline{)48018}$

Can You Write Numbers With Zeros?

Write each number in figures.

1. Two hundred seven ______________

2. Four thousand four ______________

3. Six thousand ten ______________

4. Ten thousand fifty ______________

5. Fifty thousand forty-five ______________

6. Three million ______________

7. One dollar and fifty cents ______________

8. Two dollars and nine cents ______________

9. Thirty dollars and five cents ______________

10. Ten dollars and ninety cents ______________

11. Two thousand dollars ______________

12. Sixty thousand dollars ______________

Problems With Several Steps

1. Last summer the Lanes went West for their vacation. In just three weeks, they drove 2982 miles. How many miles a day did they average?

2. For 6 days, Nancy practiced her piano lesson 40 minutes a day. How many hours did she practice in that time?

3. Don helped his father in the orchard after school one week. He worked an hour on Monday, an hour on Wednesday, an hour on Thursday, and 2 hours on Friday. He worked 3 hours on Saturday. If his father paid him 40¢ an hour, how much did he earn that week?

4. With the money he earned in Problem 3, Don sent for a dozen fancy strawberry plants for 25¢ apiece. How much of his money did Don have left?

5. Sue bought 8 jello molds for a dime apiece, and a cookie cutting set for 69¢. If she gave the clerk two dollars, how much change did she get back?

6. From Boston to Philadelphia is about 315 miles. Mr. Lane can get about 21 miles to a gallon of gasoline in his car. If gasoline costs 25¢ a gallon, how much will gasoline for the trip cost Mr. Lane?

7. For our class party we need 4 dozen doughnuts at 30¢ a dozen and other food costing $2.50. If we have $4.00 in our party fund, how much will we have left after buying all the food?

8. It cost Bob $38.50 to buy and raise 73 chickens. He sold them for an average of 96¢ a chicken. How much money did he make?

Page 138 provides enrichment material which can be used to extend concepts so far introduced.

Dividing Dollars and Cents

$ .4
53)$22.26

Check

1. One month Bob sold 53 dozen eggs to the grocery store for $22.26. To find how much he got for a dozen, on the average, divide $22.26 by 53.

You divide money numbers just as you divide any other numbers. Be sure to put the point and the dollar sign in the quotient exactly above the dollar sign and point in the dividend.

Bob got $________ a dozen for his eggs.

Divide, and check your answers.

	a	*b*	*c*	*d*
2.	42)$9.66	21)$17.43	64)$53.12	73)$45.99
3.	$ .0 32)$2.56	76)$3.80	53)$42.40	97)$38.80
4.	43)$74.82	56)$181.44	24)$48.96	75)$603.00
5.	60)$44.40	80)$40.00	30)$192.00	90)$50.40
6.	84)$33.60	33)$237.75	53)$479.30	65)$59.92

Tables and Graphs

1. This table shows the number of boys and girls in each grade in Ann's school. Fill the blanks by adding the numbers across and by adding them up and down. You find the total number of children in the school in two ways.

	Boys	*Girls*	*Total*
Kindergarten	37	29	______
Grade 1	40	36	______
Grade 2	32	28	______
Grade 3	24	31	______
Grade 4	28	27	______
Grade 5	23	19	______
Grade 6	18	22	______
Totals	______	______	______

2. How many more boys than girls are there in the whole school? ______

3. How many more children are there in the kindergarten than in the fifth grade? ______

4. How much larger is the largest class than the smallest class? ______

5. Ann decided to make a graph of the **total number of pupils in each grade** in her school. Up the left side of the graph she made a number scale to show the number of pupils. Across the bottom of the graph, she made a place for each grade. She marked **K** for Kindergarten, 1 for Grade 1, and so on.

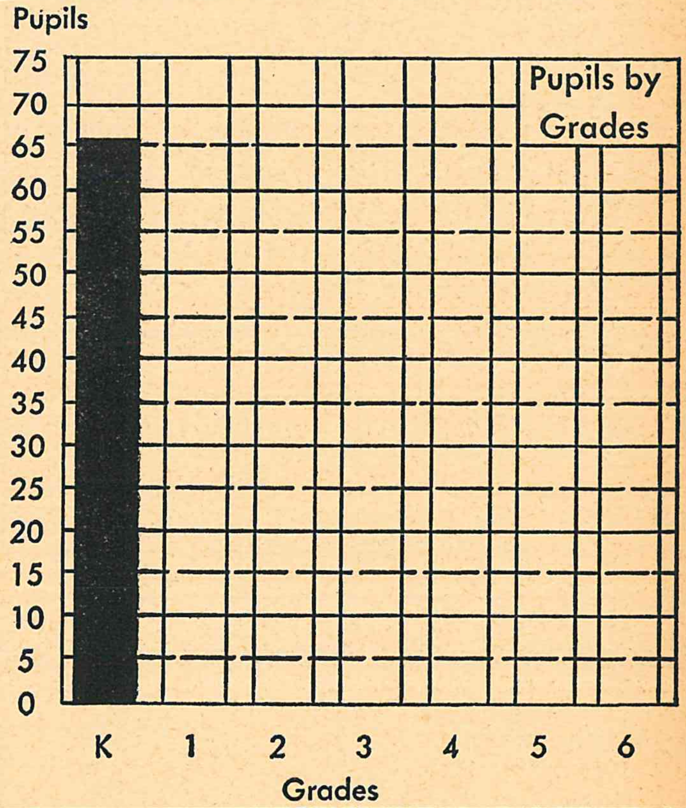
Ann drew the bar for K (Kindergarten) up as far as 66 on the number scale. The number 66 is not marked. Ann made the bar just a little higher than the line which shows 65.

How high should the bar for Grade 1 come?

______ Mark it on the graph.

6. Draw the rest of Ann's graph for her. On this graph, the bars should run up and down.

Think carefully how high each bar should come before you draw it. Then check your drawing before you shade the bar.



Look at the graph and answer these questions.

7. Which class has the most children in it? ______________________

Which class has the next most? ______________________ The least? ______________________

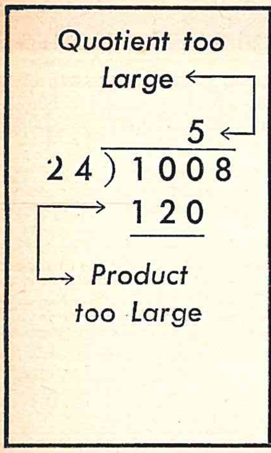
8. Which two classes are exactly the same size? ______________________

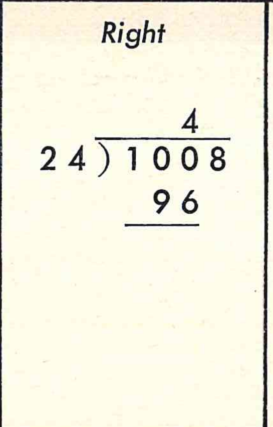
9. Which class is almost twice as large as Grade 6? ______________________

10. Which class is almost the same size as Grade 6? ______________________

Page 139 provides enrichment material which can be used to extend concepts so far introduced.

Finding the Right Quotient





1. In a test, an airplane stayed in the air 1008 hours before it landed. To find how many days the plane stayed up, divide 1008 by 24. Why do you divide by 24?

Since 10 ÷ 2 = 5, try 5 for the first trial quotient. But 5 × 24 is 120, and 120 is larger than 100, the number you must subtract it from. Then 5 must be too large.

Instead of 5, try the next smaller number, 4. Finish the division. The airplane stayed up ______ days. How many weeks was this? ______

In dividing, remember: **When the product is too large, the quotient is too large.**

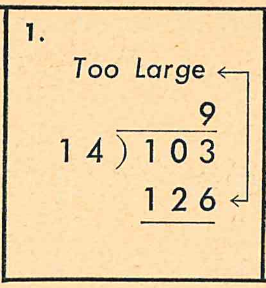
In each example below, compare the product with the number you must subtract from. If the product is too large, try a smaller quotient figure. Check by multiplying on another paper.

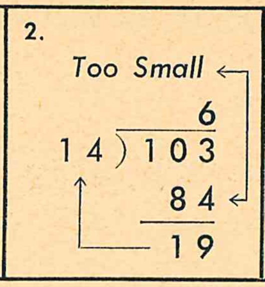
	a	*b*	*c*	*d*
2.	$35\overline{)240}$	$23\overline{)172}$	$45\overline{)380}$	$84\overline{)695}$
3.	$56\overline{)376}$	$93\overline{)495}$	$64\overline{)297}$	$76\overline{)3000}$
4.	$34\overline{)952}$	$46\overline{)1150}$	$92\overline{)4508}$	$25\overline{)950}$
5.	$83\overline{)2241}$	$76\overline{)1432}$	$36\overline{)1404}$	$64\overline{)1848}$

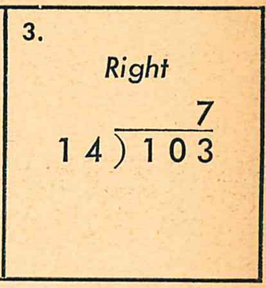
Trying Several Quotient Figures

1. Sometimes you have to try several quotient figures before you get the right one.

Divide 103 by 14. You may think, 10 ÷ 1 = 10. But, since a quotient figure can never be more than 9, you try 9. When you multiply, you find that the product is too large (see Box 1).







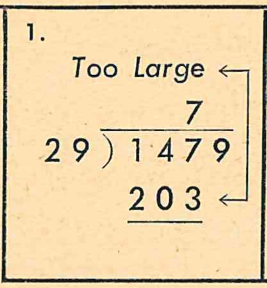
Next, you try a smaller figure—perhaps 6. But when you multiply 14 by 6 (Box 2) you see that 6 is too small.

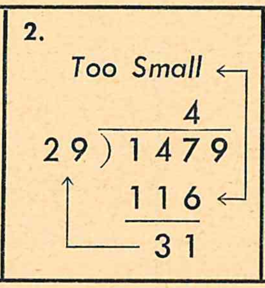
How do you know that 6 is too small? Because when you multiply 14 by 6, and subtract the product from 103, you see that the remainder, 19, is larger than the number you are dividing by. Now try 7 (Box 3, above). Multiply 14 by 7 and subtract. What is the remainder? ______

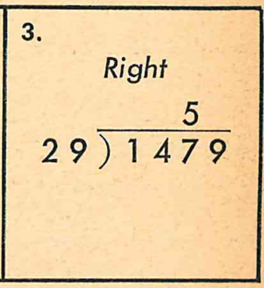
Since your remainder is smaller than the divisor, you know that 7 must be the right quotient.

2. Divide 1479 by 29. (1) You may think: 14 ÷ 2 = 7. But when you multiply, you find that the product is much too large.

(2) Here, you will save yourself time if you think: 29 is almost 30. 14 ÷ 3 = 4. Multiply 29 by 4 and subtract. But 4 is just a little too small. How do you know?







(3) Then 5 must be the correct quotient figure. Finish the division. The quotient is ______.

In each example, try the quotient figure that seems right. If it is too large, try a smaller figure. If it is too small, try a larger figure. Do your trial work and checking on another paper.

	a	*b*	*c*	*d*
3.	14)60	16)93	13)100	12)102
4.	15)125	18)154	39)169	69)3381
5.	27)1971	16)1040	58)1682	47)3854

Practicing Division

Work these examples to see how much you know about division. Check on another piece of paper.

	a	*b*	*c*	*d*
1.	$32\overline{)224}$	$43\overline{)258}$	$61\overline{)500}$	$72\overline{)381}$
2.	$53\overline{)2226}$	$21\overline{)1533}$	$85\overline{)4505}$	$33\overline{)2046}$
3.	$63\overline{)4560}$	$92\overline{)8000}$	$76\overline{)6093}$	$45\overline{)3621}$
4.	$53\overline{)6801}$	$22\overline{)17732}$	$94\overline{)32900}$	$83\overline{)76692}$
5.	$62\overline{)\$5.58}$	$54\overline{)\$45.90}$	$93\overline{)\$381.30}$	$75\overline{)\$69.00}$
6.	$15\overline{)570}$	$34\overline{)3194}$	$18\overline{)882}$	$49\overline{)1911}$

Page 140 provides enrichment material which can be used to extend concepts so far introduced.

Which Is Larger?

In each pair of numbers, draw a circle around the **larger** number.

1. 43 or 34
2. 97 or 101
3. 618 or 816
4. 946 or 940
5. 1204 or 799
6. 3672 or 3762
7. 27,249 or 27,429
8. 1,000,000 or 989,756
9. 203,014 or 78,410
10. $4.49 or $5
11. $10 or $9.85
12. $19.50 or $25
13. $5.08 or $5.80
14. $125 or $97.50
15. XVIII or XIX
16. XII or XXI
17. XXIX or XXIV
18. XXXVII or XXX
19. 1 yd. or 2 ft.
20. 3 ft. or 30 in.
21. 3 qt. or 1 gal.
22. 1 hr. or 75 min.
23. 2 weeks or 12 days
24. 30 sec. or 1 min.
25. 1 lb. or 20 oz.
26. $\frac{1}{2}$ or $\frac{1}{4}$
27. $\frac{5}{8}$ or $\frac{7}{8}$
28. $\frac{1}{6}$ or $\frac{1}{2}$
29. $\frac{1}{8}$ or $\frac{1}{4}$
30. $\frac{7}{8}$ or $\frac{1}{2}$

Can You Arrange Numbers in Order?

1. Write 28°, 7°, 0°, 33°, —4° (4° below zero) in order, from the warmest to the coldest.

__________ __________ __________ __________ __________

2. Write $7.98, $5, $3.50, $10.06, and 75¢ in the order of their value, the largest first.

__________ __________ __________ __________ __________

3. Write the heights 4 ft. 10 in., 5 ft. 4 in., 5 ft., 4 ft. 9 in., and 6 ft. in order, from the tallest to the shortest.

__________ __________ __________ __________ __________

4. Arrange $\frac{1}{6}$, $\frac{1}{2}$, $\frac{1}{8}$, $\frac{1}{4}$, and $\frac{1}{3}$ in order of their value, starting with the largest.

__________ __________ __________ __________ __________

Matching Fractions of Measures

Draw a line from each fraction to its equal.

1.		**2.**		**3.**	
$\frac{1}{4}$ hr.	20 min.	$\frac{1}{3}$ ft.	8 in.	$\frac{1}{2}$ lb.	12 oz.
$\frac{3}{4}$ hr.	15 min.	$\frac{2}{3}$ ft.	9 in.	$\frac{1}{8}$ lb.	4 oz.
$\frac{1}{2}$ hr.	45 min.	$\frac{3}{4}$ ft.	3 in.	$\frac{3}{4}$ lb.	8 oz.
$\frac{1}{3}$ hr.	30 min.	$\frac{1}{4}$ ft.	4 in.	$\frac{1}{4}$ lb.	2 oz.

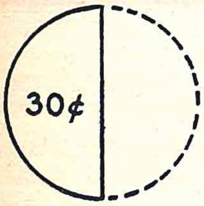
Comparing Numbers

These are quickies. Just write the answers.

1. Jill sold three roses for 25¢ and some violets for 15¢. How much **more** did she get for the roses than the violets? ______

2. Don picked 16 tomatoes and 8 ears of corn. How many **times** as many tomatoes as ears of corn did he pick? ______

3. It took Sue 36 minutes to bake a cake and 12 minutes to bake some biscuits. How many times as long did the cake take as the biscuits? ______



4. Sally bought half a pie for 30¢. At this rate, how much would a whole pie have cost? ______

5. Bill has ridden his bicycle 8 miles. This is just halfway to where he wants to go. How many miles will Bill ride in all? ______

6. Jean has saved 40¢ this week. Her father promised to give her twice as much as she saved. How much will her father give Jean? ______

7. Bill has 3 blue marbles and 6 red marbles. He has ______ as many blue marbles as red ones.

8. Bob has 4 eggs to sell. What part of a dozen eggs is 4 eggs? ______

9. Judy is 6 years old. Her cousin Jennie is 18 years old. Jennie is how many times as old as Judy? ______

10. Lemons are 3 for 10¢. How many times as much must Sally pay for 12 lemons as for 3 lemons? ______ How much must she pay for 12 lemons? ______

11. If plums are 3 for 5¢, how many plums can I buy for 15¢? ______

Finding Parts of Numbers

Fill the blanks below.

	a	*b*	*c*
1.	$\frac{1}{2}$ gal. = ______ qt.	$\frac{1}{3}$ yd. = ______ ft.	$\frac{1}{2}$ min. = ______ sec.
2.	$\frac{1}{4}$ doz. = ______ eggs	$\frac{3}{4}$ doz. = ______ eggs	$\frac{1}{3}$ doz. = ______ eggs
3.	$\frac{1}{2}$ lb. = ______ oz.	$\frac{1}{4}$ lb. = ______ oz.	$\frac{3}{4}$ lb. = ______ oz.
4.	$\frac{1}{4}$ yd. = ______ in.	$\frac{3}{4}$ yd. = ______ in.	$\frac{1}{3}$ hr. = ______ min.
5.	$\frac{1}{4}$ of 240 = ______	$\frac{1}{5}$ of 45 = ______	$\frac{1}{3}$ of 126 = ______
6.	$\frac{1}{9}$ of 360 = ______	$\frac{1}{8}$ of 248 = ______	$\frac{1}{2}$ of 164 = ______
7.	$\frac{1}{7}$ of 490 = ______	$\frac{1}{6}$ of 540 = ______	$\frac{1}{3}$ of 333 = ______

8. If $\frac{1}{8}$ lb. = ______ oz., then $\frac{7}{8}$ lb. = ______ oz.

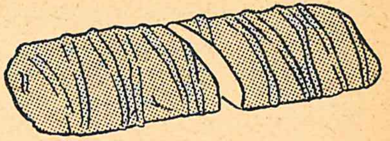
9. If $\frac{1}{5}$ hr. = ______ min., then $\frac{3}{5}$ hr. = ______ min.

Page 141 provides enrichment material which can be used to extend concepts so far introduced.

Adding and Subtracting Fractions

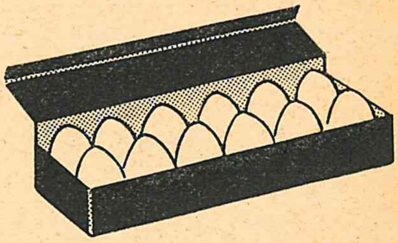
1. Sally bought a candy bar. Write $\frac{1}{2}$ in each part of the bar. Sally gave $\frac{1}{2}$ of her candy bar to Linda. What fraction of the bar did Sally have left?

$1 - \frac{1}{2} =$ ______ $\frac{1}{2} +$ ______ $= 1$ $\frac{1}{2} + \frac{1}{2} =$ ______



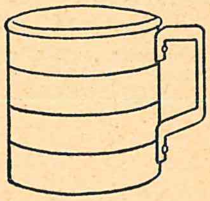
2. Bob sold $\frac{1}{4}$ dozen eggs to Mrs. Carter. Write C on $\frac{1}{4}$ dozen eggs (3 eggs). He sold $\frac{3}{4}$ dozen eggs to Mrs. Denton. Write D on $\frac{3}{4}$ dozen eggs. How many dozen eggs did Bob sell in all?

$\frac{1}{4} + \frac{3}{4} =$ ______



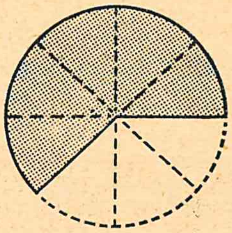
3. The measuring cup at the right is divided into fourths. Write $\frac{1}{4}$ in each part of the cup. Shade the cup to show that it is $\frac{1}{4}$ full of milk. Sue has used the rest of the milk in her cooking. What fraction of the cup of milk has Sue used?

$1 - \frac{1}{4} =$ ______



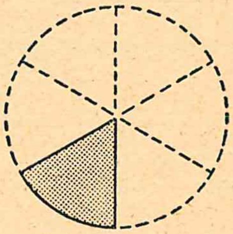
4. The cake is divided into eighths. Write $\frac{1}{8}$ in each piece of cake. Mrs. Lane, Jean, and Tony ate $\frac{3}{8}$ of the cake for lunch. What fraction of the cake is left?

$1 - \frac{3}{8} =$ ______



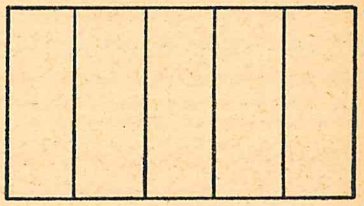
5. The pie is divided into sixths. Write $\frac{1}{6}$ in each piece of the pie. Five sixths of the pie were eaten the day the pie was made. What fraction of the pie was left?

$1 - \frac{5}{6} =$ ______



6. Shade $\frac{3}{5}$ of the rectangle at the right. What fraction of the rectangle is not shaded?

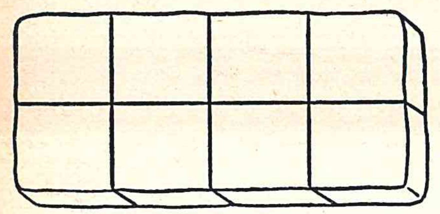
$1 - \frac{3}{5} =$ ______



Fill the blanks below.

	a	*b*	*c*	*d*
7.	$1 - \frac{1}{2} =$ ______	$1 - \frac{3}{4} =$ ______	$\frac{1}{4} + \frac{3}{4} =$ ______	$\frac{1}{2} + \frac{1}{2} =$ ______
8.	$1 - \frac{5}{8} =$ ______	$\frac{5}{8} + \frac{3}{8} =$ ______	$1 - \frac{1}{6} =$ ______	$\frac{1}{6} + \frac{5}{6} =$ ______
9.	$1 - \frac{1}{4} =$ ______	$1 - \frac{3}{8} =$ ______	$1 - \frac{5}{6} =$ ______	$\frac{3}{4} +$ ______ $= 1$
10.	$\frac{1}{2} +$ ______ $= 1$	$1 -$ ______ $= \frac{3}{8}$	$\frac{5}{6} +$ ______ $= 1$	$1 -$ ______ $= \frac{1}{4}$

Changing Fractions to Lower Terms



1. Jean has a chocolate bar. It is divided into eighths. Jean ate two eighths of the bar. Shade $\frac{2}{8}$.

In the fraction $\frac{2}{8}$, the number below the line (8) is called the **denominator.** It tells the number of equal parts into which the bar is divided.

The number above the line (2) is the **numerator.** It tells how many of these parts Jean ate.

The **numerator** and **denominator** are called the **terms** of a fraction.

When Jean eats $\frac{2}{8}$ of the bar, she eats $\frac{1}{4}$ of it. $\frac{2}{8} = \frac{1}{4}$. Changing $\frac{2}{8}$ to $\frac{1}{4}$ is called changing the fraction to **lower terms.** Both terms of the fraction $\frac{2}{8}$ were divided by the same number, 2.

Suppose Jean eats $\frac{4}{8}$ of the bar. That means she eats $\frac{1}{2}$ of the bar. $\frac{4}{8} = \frac{1}{2}$. By what number were both terms of $\frac{4}{8}$ divided? ______

$$\frac{9 \div 3}{12 \div 3} = \_\_\_\_$$

2. Bob sold 9 eggs. Nine eggs are $\frac{9}{12}$ of a dozen eggs. The fraction $\frac{9}{12}$ can be changed to lower terms. Divide both terms by 3.

Bob sold ______ of a dozen eggs.

$$\frac{5 \div \_\_\_\_}{10 \div \_\_\_\_} = \_\_\_\_$$

3. Jean has 10 cents. She wants to spend 5 cents for a pencil. What part of her money will she spend?

She will spend $\frac{5}{10}$ of her money. Change $\frac{5}{10}$ to lower terms by dividing both terms by 5. She will spend ______ of her money.

$\frac{5}{10}$ = ______

$$\frac{20}{60} = \frac{2}{6} = \_\_\_\_$$

4. Joe practiced for 20 minutes on his trumpet. To find what part of an hour he practiced, change $\frac{20}{60}$ to lower terms. You can divide both 20 and 60 by 10, so $\frac{20}{60} = \frac{2}{6}$. The terms of the fraction $\frac{2}{6}$ can be made still smaller. $\frac{2}{6}$ = ______.

When both terms of a fraction cannot be divided by the same number, the fraction is in its **lowest terms.**

Change these fractions to their lowest terms.

	a	*b*	*c*	*d*	*e*
5.	$\frac{6}{10}$ = ______	$\frac{8}{12}$ = ______	$\frac{4}{12}$ = ______	$\frac{6}{12}$ = ______	$\frac{10}{12}$ = ______
6.	$\frac{4}{16}$ = ______	$\frac{8}{16}$ = ______	$\frac{10}{16}$ = ______	$\frac{12}{16}$ = ______	$\frac{8}{24}$ = ______
7.	$\frac{12}{36}$ = ______	$\frac{18}{36}$ = ______	$\frac{10}{60}$ = ______	$\frac{30}{60}$ = ______	$\frac{45}{60}$ = ______
8.	$\frac{7}{49}$ = ______	$\frac{6}{42}$ = ______	$\frac{20}{36}$ = ______	$\frac{25}{45}$ = ______	$\frac{18}{27}$ = ______
9.	$\frac{24}{32}$ = ______	$\frac{15}{20}$ = ______	$\frac{14}{35}$ = ______	$\frac{15}{45}$ = ______	$\frac{2}{16}$ = ______
10.	$\frac{54}{63}$ = ______	$\frac{22}{44}$ = ______	$\frac{12}{15}$ = ______	$\frac{8}{64}$ = ______	$\frac{16}{40}$ = ______
11.	$\frac{80}{100}$ = ______	$\frac{42}{70}$ = ______	$\frac{12}{60}$ = ______	$\frac{21}{56}$ = ______	$\frac{28}{63}$ = ______

Can You Work With Numbers?

Check Test 1A

Subtract.

1. $$\begin{array}{r} 405 \\ \underline{96} \end{array}$$

2. $$\begin{array}{r} 1432 \\ \underline{768} \end{array}$$

3. $$\begin{array}{r} 4861 \\ \underline{1972} \end{array}$$

Add.

4. $$\begin{array}{r} 698 \\ 305 \\ 267 \\ 423 \\ \underline{754} \end{array}$$

5. $$\begin{array}{r} 9283 \\ 785 \\ 1692 \\ 78 \\ \underline{5081} \end{array}$$

6. $$\begin{array}{r} 1007 \\ 91 \\ 448 \\ 1036 \\ \underline{959} \end{array}$$

Multiply.

7. $$\begin{array}{r} 68 \\ \underline{7} \end{array}$$

8. $$\begin{array}{r} 745 \\ \underline{9} \end{array}$$

9. $$\begin{array}{r} 3092 \\ \underline{6} \end{array}$$

Divide.

10. $7\overline{)62}$ **11.** $6\overline{)516}$ **12.** $8\overline{)405}$

Copy and work.

13. $3.75 + 65¢

14. 6 × 75¢

15. $15 − $7.39

16. $3.40 ÷ 5

13. **14.** **15.** **16.**

Have you checked all your work?

Do You Understand Numbers?

Check Test 1B

1. $6.25 means ______ dollars, ______ dimes, ______ cents.

2. The number 50,475 means ______ thousands, ______ hundreds, ______ tens, ______ ones.

3. Write the number that means 27 thousands, 6 hundreds, no tens, 7 ones. ____________

4. In the number 1927, does the 1 or the 9 have more value? ______

5. Draw a line under the larger number: 983 or 1207.

6. Write the largest 4-figure number you can make with the figures 2 9 4 7 : ______

7. Write the smallest 3-figure number you can make with the figures 5 1 3 : ______

8. Write the missing fractions: $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, ______, $\frac{5}{8}$, ______, $\frac{7}{8}$, 1.

9. How many sixths make one half? ______

10. What number is $\frac{1}{2}$ of 30? ______

11. What number is twice 18? ______

12. Which is longer, 5 ft. or 53 in.? ________

13. What measure is $\frac{1}{2}$ of a quart? ______

14. What part of a yard is a foot? ______

15. How many minutes are $\frac{1}{4}$ of an hour? ______

16. Write the two subtraction facts that depend on 9 + 6 = 15:

15 − ____ = ______ 15 − ____ = ______

Check Tests 1A, 1B, and 1C are to be given following completion of page 28.

Can You Use Arithmetic?

Check Test 1C

1. Joe started practicing his trumpet lesson at 4:15. He stopped at 4:50. How many minutes had he practiced?

____

2. In Dick's school there are 119 boys and 93 girls. How many pupils go to that school?

____

3. Nine boys were playing ball. The ball broke a window. It cost $3.15 to replace the window. If the boys shared the cost equally, what was each boy's share?

____

4. Don helped his father load 2800 lb. of lime into the truck. How much more than a ton of lime was there?

____

5. Jim gets a nickel for each empty milk bottle he returns to the store. Last week he returned 24 bottles. How much money did he get?

____

6. The Lanes are taking a 358-mile trip. They have gone 170 miles. How many miles more or less than halfway have they gone?

________ more ________ less

7. Sally went to the store for her mother and bought 34¢ worth of groceries. Sally handed the clerk a dollar bill. How much change did she get back?

____

8. Bob sold a 4-pound chicken for $1.80. How much did he get per pound?

____

9. We want to arrange 27 rows of chairs for our play, with 9 chairs in each row. How many chairs do we need?

____

10. If the Lanes drive 35 miles an hour on the average, how far will they drive in 7 hours?

____

1.	**2.**
3.	**4.**
5.	**6.**
7.	**8.**
9.	**10.**

Check Tests 1A, 1B, and 1C are to be given following completion of page 28.

Can You Work With Numbers?

Check Test 2A

Be sure to check all your work.

Add.

1. $\begin{array}{r}69\\18\\74\\36\\47\\\underline{50}\end{array}$

2. $\begin{array}{r}3075\\638\\459\\62\\\underline{1487}\end{array}$

3. $\begin{array}{r}\$\ 8.40\\3.94\\10.15\\.78\\6.59\\\underline{27.00}\end{array}$

Subtract.

4. $\begin{array}{r}8153\\\underline{7768}\end{array}$

5. $\begin{array}{r}3207\\\underline{609}\end{array}$

6. $\begin{array}{r}\$126.75\\\underline{80.98}\end{array}$

7. $\begin{array}{r}\$60.00\\\underline{49.65}\end{array}$

8. $\begin{array}{r}\$20.42\\\underline{19.69}\end{array}$

9. $\begin{array}{r}\$100.00\\\underline{79.43}\end{array}$

Multiply.

10. $\begin{array}{r}907\\\underline{36}\end{array}$

11. $\begin{array}{r}\$6.85\\\underline{40}\end{array}$

12. $\begin{array}{r}418\\\underline{237}\end{array}$

13. $\begin{array}{r}732\\\underline{509}\end{array}$

14. $\begin{array}{r}402\\\underline{168}\end{array}$

Divide.

15. $21\overline{)168}$

16. $40\overline{)200}$

17. $82\overline{)574}$

18. $51\overline{)309}$

Do You Understand Numbers?

Check Test 2B

1. Write the number that means 1 million, 706 thousands, no hundreds, 8 tens, 5 ones.

____

2. Write six dollars and six cents in figures. ______________

3. Find 389 + 389 + 389 + 389 + 389 + 389 + 389 in a short way. ________________

4. Arrange 1037, 289, and 301 in order of their value, the smallest first.

__________, __________, __________

5. Draw a circle around the fraction that is largest: $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{1}{8}$.

6. Cross out the smaller number: $\frac{5}{8}$ or $\frac{3}{8}$.

7. How many eighths make $\frac{3}{4}$? ________

8. Divide 30 by 7, writing the remainder as a fraction. ________

9. $\frac{3}{4}$ dozen eggs = ______ eggs.

10. What measure is 2000 lb.? ________

Check Tests 2A, 2B, and 2C are to be given following completion of page 60.

Can You Use Arithmetic?

Check Test 2C

1. Bill earned $28.40 last summer. He spent $18.75 and saved the rest. How much did he save?

____

2. How much must I pay for 75 3-cent stamps?

____

3. Dick wants a saw costing $3.98 and a tool chest costing $10.25. Find the total cost.

____

4. Our car went 280 miles on 14 gallons of gasoline. How many miles did it go on one gallon of gasoline on the average?

____

5. Tom read the thermometer outdoors one winter day. It said 14°. How many degrees below freezing is this?

____

6. Sally's bus was supposed to come at 5 minutes before 9. It did not come until 10 minutes past 9. How many minutes late was the bus?

____

7. Bob weighs 89 pounds, Sue weighs 73 pounds, Mr. Gray weighs 180 pounds, and Mrs. Gray weighs 128 pounds. What is the average weight of the members of the Gray family?

____

8. Sue spent 65¢ for lemons and sugar to make lemonade. Then she sold 16 glasses of lemonade for 8¢ a glass. How much money did she make?

____

9. Bill and Joe are saving money to buy a $6 football. Bill has saved $1.80 and Joe has saved $2.95. How much more money do the boys need?

____

10. On Friday Don picked 42 ears of corn in his garden. On Saturday he picked 78 ears. How many dozen ears of corn did he pick in the two days?

____

Check Tests 2A, 2B, and 2C are to be given following completion of page 60.

Can You Work With Numbers?

Check Test 3A

Divide. Check on another paper.

1. $73\overline{)\$32.85}$ 2. $21\overline{)\$2.94}$ 3. $36\overline{)7488}$ 4. $12\overline{)607}$

In your answer, be sure each fraction is changed to its lowest terms.

5. $\frac{3}{8} + \frac{7}{8} =$ ______   6. $3\frac{1}{2} + 2\frac{1}{2} =$ ______   7. $\frac{3}{4} - \frac{1}{4} =$ ______   8. $2 - \frac{1}{3} =$ ______

Add.

9. $\begin{array}{r} 4\frac{7}{10} \\ \underline{3\frac{1}{10}} \end{array}$ 10. $\begin{array}{r} 6\frac{5}{8} \\ \underline{4\frac{7}{8}} \end{array}$ 11. $\begin{array}{r} 10\frac{3}{4} \\ \underline{5\frac{3}{4}} \end{array}$ 12. $\begin{array}{r} 4\frac{3}{4} \\ \underline{1\frac{1}{4}} \end{array}$ 13. $\begin{array}{r} 6 \\ \underline{8\frac{5}{16}} \end{array}$

Subtract.

14. $\begin{array}{r} 3\frac{4}{5} \\ \underline{1\frac{2}{5}} \end{array}$ 15. $\begin{array}{r} 5\frac{1}{6} \\ \underline{4\frac{5}{6}} \end{array}$ 16. $\begin{array}{r} 20\frac{3}{8} \\ \underline{7\frac{5}{8}} \end{array}$ 17. $\begin{array}{r} 51\frac{1}{16} \\ \underline{49\frac{5}{16}} \end{array}$ 18. $\begin{array}{r} 47 \\ \underline{18\frac{3}{11}} \end{array}$

Do You Understand Numbers?

Check Test 3B

1. Write "four thousand eight" in figures. ______________

2. Write "fifty dollars and three cents" in figures. ______________

3. Change $\frac{9}{4}$ to a mixed number. ________

4. Change $\frac{8}{12}$ to its lowest terms. ________

5. Write the largest four-figure number you can, using all the figures 2, 5, 8, 9. __________

6. $\frac{3}{4}$ lb. = ______ oz.

7. $\frac{3}{4}$ hr. = ______ min.

8. How many thousands are there in one million? __________

9. What number comes just after 599? ________

10. Arrange $\frac{1}{4}$, $\frac{1}{8}$, and $\frac{1}{2}$ in the order of their value, the smallest first.

______, ______, ______

11. 52 in. = ______ ft. ______ in.

12. 26 oz. = ______ lb. ______ oz.

13. What measure is $\frac{1}{3}$ of a yard? ________

14. A quart is what fraction of a gallon? ______

15. The number 5329607 means ______ millions, ______ thousands, ______ hundreds, ______ tens, ______ ones.

Check Tests 3A, 3B, and 3C are to be given following completion of page 88.

Can You Use Arithmetic?

Check Test 3C

1. Bob sold 15 chickens for $16.20. How much was this for each chicken, on the average?

____

2. It is 70° in the house and 24° outdoors. How much warmer is it in the house than outdoors?

____

3. There were 78 Boy Scouts at Bill's Scout camp. One evening 32 visitors came for campfire. How many persons were at campfire that night?

____

4. How much must a baseball team pay for 15 baseballs costing $1.89 each? (Estimate your answer first.)

Estimate ______ Answer ______

5. Jerry has started to sell weekly magazines. In three weeks he sold 28, 34, and 40 magazines. Find the average number he sold each week.

6. Ann went to Jean's house to stay 2 hours. She has been there for 55 minutes. How many minutes longer may she stay?

____

7. In the city where Jean lives, 8 blocks make 1 mile. How many feet long is each block?

____

8. A train is due to arrive at 3:48. It is 20 minutes late. At what time will it get there?

____

9. Nora got $5 for her birthday. She bought a book for $1.25 and a scarf for 95¢. How much money did she have left?

____

10. If Jerry saves $3 every month, how much will he save in two years?

____

Are all your answers sensible?

Check Tests 3A, 3B, and 3C are to be given following completion of page 88.

Can You Work With Numbers?

Check Test 4A

Copy and work.

1. $6705 + 593 + 87$
2. 708×945
3. $\$10 - \$6.07$
4. $\$97.44 \div 24$
5. $2.8 + 7.3 + 16.5$
6. $3\frac{1}{2} \times \$1.60$
7. $3\frac{3}{4} + 4\frac{7}{8}$
8. $6 - 4\frac{5}{12}$
9. $8\frac{3}{10} - 4\frac{1}{2}$

1.	2.	3.	4.
5.	6.	7.	
8.		9.	

Do You Understand Numbers?

Check Test 4B

1. Write $3.86 to the nearest dollar. ____________

2. Write the smallest number you can, using 4, 2, 5, 3, and 1 each once. ____________

3. Write the number that means 18 thousands, 6 hundreds, 1 ten, 7 ones. ____________

4. Round 938 to the nearest hundred. ________

5. Twenty is how many times as large as 5? ______

6. What is the smallest number of coins you can use in making change from 1 dollar for a purchase of 34 cents? ______

7. What fraction of 16 is 4? ______

8. Seven is how much less than 12? ______

9. Draw a circle around the number that is nearest 200: 176 228 185.

10. Cross out the smallest fraction:

$\frac{1}{6}$ $\frac{1}{9}$ $\frac{1}{5}$

11. Change $\frac{2}{3}$ to 12ths. ______

12. Draw a line around the larger number:

$\frac{3}{4}$ lb. 13 oz.

13. Write .5 as a fraction reduced to lowest terms. ______

14. Write 1.2, 12, .12 in the order of their value, the smallest first. ______, ______, ______

15. Write $\frac{7}{100}$ as a decimal. ________

16. Find the perimeter of a square with each side 9 feet long. ________

17. On a scale drawing in which 1″ = 4′, a line $1\frac{1}{2}$ in. long stands for ______ ft.

18. How many millions are there in the number 27209500? ______

19. 5 ft. 9 in. = ______ in.

20. What Roman number comes just before XX? What number comes just after XXVIII? ________

Check Tests 4A, 4B, and 4C are to be given following completion of page 120.

Can You Use Arithmetic?

Check Test 4C

1. At a sale, 3 boxes of soap flakes were sold for 78¢. The regular price was 30¢ a box. How much will Mrs. Lane save by buying 3 boxes at the sale?

____

2. Dick had a board $8\frac{1}{2}$ ft. long. He cut off a piece $5\frac{3}{4}$ ft. long. How much of the board was left?

____

3. At 64¢ a pound, a ham weighing $7\frac{1}{4}$ lb. will cost ________. How much change will Sally's mother get from a ten-dollar bill if she buys the ham?

____

4. Sally bought a piece of ribbon $\frac{3}{4}$ yd. long. She used 20 inches of the ribbon. How many inches were left?

____

5. On a trip, we drove 1168 miles in 4 days. Estimate to the nearest hundred miles our average distance each day. Then find the exact average.

Estimate ________ Answer ________

6. Bob sold 3 chickens weighing 5 lb., $6\frac{1}{4}$ lb., and $3\frac{3}{4}$ lb. Find their average weight.

____

7. If apples are 3 lb. for 20¢, how much must Sally pay for 6 lb. of apples?

____

8. How much picture molding will Dick need to make a picture frame 26 in. long and 18 in. wide?

____

9. Don's father has 20 gal. of maple sirup to sell. If he gets 90¢ a quart for it, how much should he get for all his sirup?

____

10. One winter day the temperature rose from 8° to 33°. On a spring day it rose from 39° to 80°. How much more did the temperature rise on the day in the spring?

____

Are all your answers reasonable?

Check Tests 4A, 4B, and 4C are to be given following completion of page 120.

Changing Fractions of Measures to Lowest Terms

Change each of the answers to the lowest terms.

1. What part of a foot is 9 inches?

$\frac{9}{12} =$ ______

2. Four eggs are what part of a dozen eggs?

______

3. A 6-ounce package of candy is what part of a pound?

______

4. What part of a pound is 12 ounces?

______

5. Fifteen minutes are what part of an hour?

______

6. Forty minutes are what part of an hour?

______

7. Nine inches are what part of a yard?

$\frac{9}{36} =$ ______

8. Eighteen inches are what part of a yard?

______

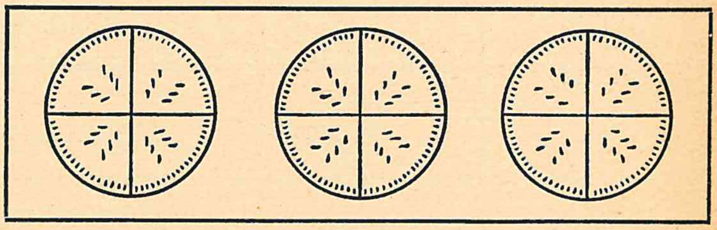
9. What part of a day is 10 hours?

$\frac{10}{24} =$ ______

10. A nickel is what part of a quarter?

______

Changing Fractions to Mixed Numbers



1. These pies have been divided into fourths. Shade 5 of the fourths ($\frac{5}{4}$). You shaded one whole pie and $\frac{1}{4}$ of another pie. $\frac{5}{4} = 1\frac{1}{4}$.

A **whole number** written **together with a fraction** is called a **mixed number.**

In $1\frac{1}{4}$, 1 is the whole number. The fraction is ______.

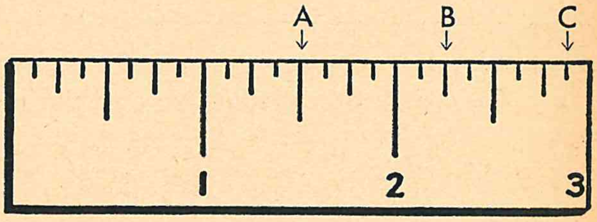
2. Shade another fourth of the second pie. Now you have shaded 1 pie and $\frac{2}{4}$ or $\frac{1}{2}$ of another pie.

$\frac{6}{4} =$ ______

3. The picture of the pies will help you change these fractions to mixed numbers or whole numbers.

$\frac{7}{4} = 1\frac{3}{4}$ $\quad \frac{8}{4} =$ ______ $\quad \frac{9}{4} =$ ______ $\quad \frac{10}{4} =$ ______ $\quad \frac{11}{4} =$ ______ $\quad \frac{12}{4} =$ ______

Each time, you divide the numerator by the denominator.



4. Arrow A shows 3 half inches. Change $\frac{3}{2}$ to a mixed number. $\frac{3}{2} = 1$______

5. Arrow B shows 9 quarter inches. $\frac{9}{4} = 2$______

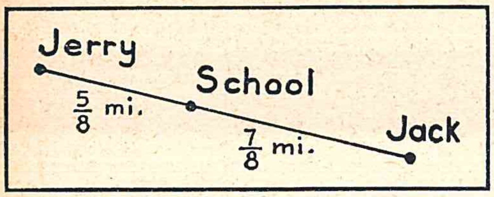
6. Arrow C shows 23 eighth inches. $\frac{23}{8} = 2$______

7. Change each fraction to a mixed number in lowest terms.

$\frac{7}{2} =$ ______ $\quad \frac{10}{4} =$ ______ $\quad \frac{12}{8} =$ ______ $\quad \frac{18}{4} =$ ______ $\quad \frac{14}{8} =$ ______ $\quad \frac{20}{8} =$ ______

Page 142 provides enrichment material which can be used to extend concepts so far introduced.

Adding Similar Fractions



1. Jerry lives five eighths of a mile from school. Jack lives seven eighths of a mile from school on the other side of the schoolhouse. To find how far Jack's house is from Jerry's house, add $\frac{5}{8}$ mile and $\frac{7}{8}$ mile.

$\frac{5}{8}$ and $\frac{7}{8}$ have the same denominator (8). Fractions with the same denominator are called **similar fractions.** You add similar fractions just as you add 5 marbles and 7 marbles. 5 eighths + 7 eighths = 12 eighths. $\frac{5}{8} + \frac{7}{8} = \frac{12}{8}$. Change $\frac{12}{8}$ to a mixed number in lowest terms.

Jack's house is ______ miles from Jerry's house.

$1\frac{3}{4}$
$2\frac{3}{4}$

2. Don worked $1\frac{3}{4}$ hours on Friday and $2\frac{3}{4}$ hours on Saturday. To find how many hours he worked in all, add $1\frac{3}{4}$ and $2\frac{3}{4}$.

Add the fractions first. $\frac{3}{4} + \frac{3}{4} = \frac{6}{4}$. Change $\frac{6}{4}$ to $1\frac{1}{2}$. Write $\frac{1}{2}$ under the fractions. Carry 1 to the whole numbers. Add the whole numbers, starting with the 1 you carried.

Don worked ______ hours in all.

$1\frac{1}{2}$
2
$2\frac{1}{2}$
$1\frac{1}{2}$

3. In four days Don sold the following numbers of ears of corn: $1\frac{1}{2}$ dozen, 2 dozen, $2\frac{1}{2}$ dozen, $1\frac{1}{2}$ dozen. To find how many dozen ears he sold, add the fractions first.

$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{3}{2}$. Think $\frac{3}{2} = 1\frac{1}{2}$. Write the $\frac{1}{2}$; carry the 1 to the whole numbers. Add the whole numbers.

Don sold ______ dozen ears of corn.

Add. Be sure the fractions in the sums are in lowest terms.

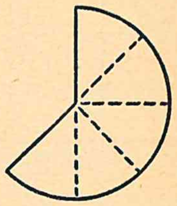
	a	*b*	*c*	*d*	*e*	*f*
4.	$\frac{3}{5}$ $\frac{1}{5}$	$\frac{1}{8}$ $\frac{3}{8}$	$\frac{3}{8}$ $\frac{7}{8}$	$\frac{2}{3}$ $\frac{2}{3}$	$\frac{3}{4}$ $\frac{3}{4}$	$\frac{7}{10}$ $\frac{7}{10}$
5.	$1\frac{5}{8}$ $1\frac{1}{8}$	$2\frac{1}{2}$ $1\frac{1}{2}$	$5\frac{3}{4}$ $2\frac{3}{4}$	$2\frac{2}{3}$ $3\frac{2}{3}$	$4\frac{1}{6}$ $1\frac{5}{6}$	$2\frac{3}{10}$ $\frac{9}{10}$
6.	$4\frac{1}{8}$ $2\frac{3}{8}$	$9\frac{4}{5}$ $10\frac{3}{5}$	$1\frac{2}{9}$ $5\frac{7}{9}$	$\frac{5}{12}$ $6\frac{7}{12}$	$7\frac{3}{8}$ $\frac{7}{8}$	$3\frac{2}{5}$ $6\frac{4}{5}$
7.	$\frac{1}{8}$ $\frac{3}{8}$ $\frac{5}{8}$	$\frac{3}{4}$ $\frac{3}{4}$ $\frac{1}{4}$	3 $\frac{2}{3}$ $1\frac{2}{3}$	$1\frac{1}{8}$ $6\frac{3}{8}$ $2\frac{7}{8}$	$4\frac{1}{6}$ $\frac{5}{6}$ 8	$10\frac{2}{5}$ $1\frac{4}{5}$ $13\frac{3}{5}$

Subtracting Similar Fractions

1. Here is a picture of $\frac{5}{8}$ of a chocolate layer cake Peggy's family had left from lunch. That afternoon, Peggy came home from school with two friends. Peggy's mother told the three girls they could have 3 slices, or $\frac{3}{8}$ of the cake. Then what fraction of the cake was left?

To find the answer, subtract $\frac{3}{8}$ from $\frac{5}{8}$. $\frac{3}{8}$ and $\frac{5}{8}$ are similar fractions. Subtract the numerator 3 from the numerator 5 and change the answer to lowest terms.

$\frac{5}{8} - \frac{3}{8} = \frac{\quad}{8} =$ ______



2. Sue lives $4\frac{3}{4}$ miles from school. Jill lives $2\frac{1}{4}$ from school. To find how many miles farther from school Sue lives than Jill does, subtract $2\frac{1}{4}$ from $4\frac{3}{4}$.

Subtract the fractions first. $\frac{3}{4} - \frac{1}{4} = \frac{2}{4}$. Change $\frac{2}{4}$ to lower terms. Then subtract the whole numbers.

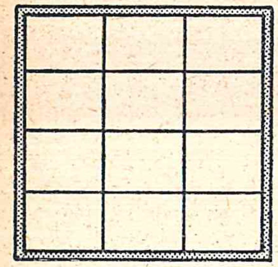
Sue lives ______ miles farther from school than Jill does.

$4\frac{3}{4}$
$2\frac{1}{4}$

Subtract. Change the fractions in your answers to lower terms whenever you can.

	a	*b*	*c*	*d*	*e*	*f*
3.	$\frac{4}{5}$ $\frac{1}{5}$	$\frac{7}{8}$ $\frac{1}{8}$	$\frac{3}{4}$ $\frac{1}{4}$	$\frac{5}{6}$ $\frac{1}{6}$	$\frac{9}{10}$ $\frac{3}{10}$	$\frac{7}{12}$ $\frac{1}{12}$
4.	$3\frac{4}{5}$ $1\frac{2}{5}$	$5\frac{2}{3}$ $2\frac{1}{3}$	$12\frac{7}{8}$ $4\frac{3}{8}$	$2\frac{7}{10}$ $2\frac{3}{10}$	$7\frac{5}{12}$ $3\frac{1}{12}$	$9\frac{11}{12}$ $5\frac{5}{12}$
5.	$11\frac{1}{2}$ $7\frac{1}{2}$	$10\frac{3}{4}$ $6\frac{3}{4}$	$20\frac{3}{8}$ $9\frac{3}{8}$	$9\frac{3}{4}$ 6 $3\frac{3}{4}$	$14\frac{1}{2}$ 5	$21\frac{5}{8}$ 12
6.	$14\frac{5}{8}$ $5\frac{1}{8}$	$8\frac{9}{10}$ $8\frac{1}{10}$	$27\frac{3}{5}$ $18\frac{3}{5}$	$23\frac{1}{4}$ 7	$41\frac{7}{12}$ $26\frac{5}{12}$	$30\frac{13}{16}$ $25\frac{7}{16}$
7.	$82\frac{5}{9}$ $79\frac{2}{9}$	$63\frac{1}{10}$ 62	$31\frac{5}{7}$ $29\frac{1}{7}$	$45\frac{1}{4}$ $19\frac{1}{4}$	$20\frac{11}{12}$ $1\frac{7}{12}$	$35\frac{13}{20}$ $7\frac{3}{20}$
8.	$65\frac{3}{4}$ $58\frac{1}{4}$	$27\frac{7}{16}$ 18	$51\frac{5}{9}$ $27\frac{5}{9}$	$10\frac{4}{5}$ $10\frac{3}{5}$	$77\frac{17}{25}$ $67\frac{7}{25}$	$60\frac{1}{7}$ 48

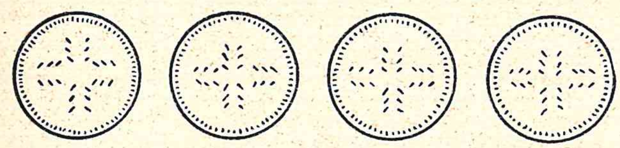
Borrowing With Mixed Numbers



1. Sue made some gingerbread and cut it into 12 equal pieces. The family ate 5 pieces for supper. Shade the 5 pieces. What part of the gingerbread was left?

12 pieces — 5 pieces leaves 7 pieces. $\frac{7}{12}$ of the gingerbread was left.

The whole pan of gingerbread, you see, is $\frac{12}{12}$. What you are really doing is subtracting $\frac{5}{12}$ from $\frac{12}{12}$. $\frac{12}{12} - \frac{5}{12} =$ ______



2. Sam's mother made 4 pies. She gave Sam and his friends $1\frac{1}{2}$ pies for a picnic party. To find how many pies were left, shade $1\frac{1}{2}$ pies.

$4 - 1\frac{1}{2} =$ ______

$$\begin{array}{r} 7\frac{1}{4} = 6\frac{5}{4} \\ \underline{1\frac{3}{4} = 1\frac{3}{4}} \end{array}$$

3. Mrs. Lane bought $1\frac{3}{4}$ pounds of cheese. The clerk cut her cheese from a piece of cheese weighing $7\frac{1}{4}$ pounds. To find how many pounds of cheese were left, subtract $1\frac{3}{4}$ from $7\frac{1}{4}$.

You cannot subtract $\frac{3}{4}$ from $\frac{1}{4}$, so borrow 1 from 7, change it to $\frac{4}{4}$, and add $\frac{4}{4}$ to $\frac{1}{4}$. $\frac{4}{4} + \frac{1}{4} = \frac{5}{4}$. $7\frac{1}{4} = 6\frac{5}{4}$.

Now subtract $1\frac{3}{4}$ from $6\frac{5}{4}$. There were ______ pounds of cheese left.

Write the missing numerators.

	a	*b*	*c*	*d*	*e*
4.	$1 = \frac{}{3}$	$1 = \frac{}{8}$	$1 = \frac{}{6}$	$3 = \frac{12}{4}$	$4 = \frac{}{8}$
5.	$1\frac{1}{4} = \frac{}{4}$	$1\frac{1}{3} = \frac{}{3}$	$1\frac{1}{6} = \frac{}{6}$	$1\frac{1}{8} = \frac{}{8}$	$1\frac{3}{8} = \frac{}{8}$
6.	$1\frac{5}{8} = \frac{}{8}$	$3\frac{1}{4} = 2\frac{5}{4}$	$4\frac{1}{3} = 3\frac{}{3}$	$7\frac{3}{8} = 6\frac{}{8}$	$5\frac{3}{10} = 4\frac{}{10}$

Subtract. Change fractions in the answers to lowest terms.

	a	*b*	*c*	*d*	*e*	*f*
7.	$\begin{array}{r} 3 \\ \underline{1\frac{1}{2}} \end{array}$	$\begin{array}{r} 5 \\ \underline{2\frac{1}{4}} \end{array}$	$\begin{array}{r} 4 \\ \underline{1\frac{3}{4}} \end{array}$	$\begin{array}{r} 7 \\ \underline{3\frac{1}{8}} \end{array}$	$\begin{array}{r} 6 \\ \underline{1\frac{5}{8}} \end{array}$	$\begin{array}{r} 9 \\ \underline{6\frac{7}{10}} \end{array}$
8.	$\begin{array}{r} 4\frac{1}{4} \\ \underline{1\frac{3}{4}} \end{array}$	$\begin{array}{r} 5\frac{1}{3} \\ \underline{2\frac{2}{3}} \end{array}$	$\begin{array}{r} 7\frac{1}{8} \\ \underline{4\frac{5}{8}} \end{array}$	$\begin{array}{r} 6\frac{2}{5} \\ \underline{3\frac{4}{5}} \end{array}$	$\begin{array}{r} 7\frac{3}{8} \\ \underline{2\frac{5}{8}} \end{array}$	$\begin{array}{r} 8\frac{1}{6} \\ \underline{4\frac{5}{6}} \end{array}$
9.	$\begin{array}{r} 6\frac{1}{5} \\ \underline{4\frac{4}{5}} \end{array}$	$\begin{array}{r} 9\frac{1}{10} \\ \underline{3\frac{3}{10}} \end{array}$	$\begin{array}{r} 4\frac{3}{8} \\ \underline{3\frac{7}{8}} \end{array}$	$\begin{array}{r} 6\frac{5}{8} \\ \underline{5\frac{7}{8}} \end{array}$	$\begin{array}{r} 8\frac{3}{10} \\ \underline{2\frac{7}{10}} \end{array}$	$\begin{array}{r} 10\frac{1}{12} \\ \underline{3\frac{5}{12}} \end{array}$

Practice in Adding Similar Fractions

	a	*b*	*c*	*d*	*e*	*f*
1.	$\frac{3}{5}$ $\frac{1}{5}$	$\frac{1}{8}$ $\frac{5}{8}$	$\frac{2}{3}$ $\frac{2}{3}$	$\frac{3}{4}$ $\frac{3}{4}$	$\frac{5}{8}$ $\frac{7}{8}$	$\frac{7}{10}$ $\frac{9}{10}$
2.	$2\frac{1}{3}$ $3\frac{1}{3}$	$3\frac{2}{5}$ $1\frac{1}{5}$	$4\frac{1}{8}$ $2\frac{3}{8}$	$1\frac{1}{4}$ $\frac{3}{4}$	$6\frac{1}{3}$ $2\frac{2}{3}$	$4\frac{7}{8}$ $3\frac{1}{8}$
3.	$5\frac{1}{2}$ $2\frac{1}{2}$	$2\frac{3}{8}$ $6\frac{5}{8}$	$5\frac{2}{3}$ $4\frac{2}{3}$	$3\frac{7}{10}$ $5\frac{7}{10}$	$\frac{5}{8}$ $2\frac{7}{8}$	$7\frac{11}{12}$ $5\frac{5}{12}$
4.	$2\frac{1}{2}$ $3\frac{1}{2}$ $1\frac{1}{2}$	$6\frac{2}{3}$ $1\frac{1}{3}$ $4\frac{2}{3}$	$5\frac{1}{4}$ $3\frac{3}{4}$ $2\frac{3}{4}$	$3\frac{5}{8}$ 6 $2\frac{3}{8}$	$1\frac{3}{8}$ $\frac{5}{8}$ $1\frac{7}{8}$	$2\frac{3}{10}$ $5\frac{9}{10}$ $8\frac{7}{10}$

Practice in Subtracting Similar Fractions

1.	$\frac{3}{4}$ $\frac{1}{4}$	$\frac{4}{5}$ $\frac{3}{5}$	$\frac{7}{8}$ $\frac{1}{8}$	1 $\frac{1}{6}$	2 $\frac{3}{8}$	2 $\frac{9}{10}$
2.	$4\frac{7}{8}$ $1\frac{1}{8}$	$9\frac{1}{2}$ $7\frac{1}{2}$	$5\frac{2}{3}$ $5\frac{1}{3}$	$10\frac{5}{8}$ $6\frac{3}{8}$	$8\frac{4}{5}$ 5	$7\frac{7}{12}$ $2\frac{1}{12}$
3.	6 $3\frac{5}{8}$	$6\frac{1}{4}$ $3\frac{3}{4}$	3 $2\frac{1}{2}$	$7\frac{3}{10}$ $2\frac{9}{10}$	$15\frac{1}{12}$ $6\frac{5}{12}$	$31\frac{1}{8}$ $13\frac{7}{8}$

Using Fractions

Write A in front of a problem if you add. Write S if you subtract. Write the answers in the blanks after the problems. See how many you can work as quickies.

____1. Sue opened a 2-pound box of sugar. She used $\frac{3}{4}$ pound of the sugar to make cookies. How many pounds of sugar were left? ________

____2. Nancy practiced her piano lesson $\frac{3}{4}$ hour this morning and $\frac{3}{4}$ hour this afternoon. How many hours did she practice today? ________

____3. Sam caught a fish that was 11 inches long. Bob caught a fish $9\frac{1}{2}$ inches long. How many inches longer was Sam's fish than Bob's? ________

____4. Dick had a board $8\frac{1}{4}$ feet long. He cut off a piece $2\frac{3}{4}$ feet long. How many feet of board did he have left? ________

____5. Tom earns money cutting lawns for the neighbors. It took him $2\frac{1}{4}$ hours to cut one lawn and $1\frac{3}{4}$ hours to cut another lawn. How many hours did it take him to cut both lawns? ________

____6. Mary is $10\frac{1}{2}$ years old. Her little brother is just 5 years old. How many years older than her brother is Mary? ________

____7. Mrs. Gray had $15\frac{7}{8}$ yards of cloth for window curtains. She used $7\frac{3}{8}$ yards of this cloth for curtains in one room. How many yards did she have left? ________

____8. When Sally went to lunch in the cafeteria, she saw $4\frac{1}{6}$ pies behind the counter. When she came out there were only $1\frac{5}{6}$ pies left. How many pies had been sold while she was eating lunch? ________

____9. Sue and Jill made three pans of candy for the food sale at school. The candy weighed $1\frac{7}{8}$ lb., $2\frac{3}{8}$ lb., and $2\frac{1}{8}$ lb. Find the total weight of the candy. ________

____10. Bill is practicing jumping. A week ago he could jump only $8\frac{7}{12}$ feet. Today he jumped $11\frac{11}{12}$ feet. How many feet farther can he jump now than he could a week ago? ________

____11. Mary's baby sister weighed $6\frac{3}{4}$ lb. when she was born. Now she weighs $13\frac{1}{4}$ lb. How many pounds has she gained in weight? ________

____12. Mrs. Gray baked two cakes. She used $2\frac{1}{4}$ cups of flour for the first cake and $1\frac{3}{4}$ cups for the second cake. How many cups of flour did she use in all? ________

____13. Sally bought $3\frac{3}{8}$ yards of cloth for a dress and $\frac{5}{8}$ yard for trimming. How many yards did she buy altogether? ________

____14. Jerry lives $1\frac{7}{10}$ miles north of the post office. Bill lives $2\frac{9}{10}$ miles south of the post office. How many miles is Jerry's house from Bill's house? ________

Read the problems again. Are all your answers reasonable?

Some Quickies With Fractions

These problems are all quickies. Just write the answers in the blanks.

1. Tom worked $\frac{1}{2}$ hour Friday night and $3\frac{1}{2}$ hours Saturday morning setting up his electric train. How many hours did he work?

____

2. Nancy practiced $\frac{3}{4}$ hour yesterday and $\frac{3}{4}$ hour today. How many hours did she practice both days?

____

3. Sue took a small pie to school and ate $\frac{1}{3}$ of it for lunch. She gave the rest away. What part of the pie did she give away?

____

4. Sue's mother was making Sue a dress. She bought 4 yards of cloth and had $\frac{1}{2}$ yard left. How many yards did she use?

____

5. Bob is riding to town on his bicycle. Town is $10\frac{1}{4}$ miles away, and Bob has ridden $6\frac{1}{4}$ miles. How much farther does he have to go?

____

6. When Don measured his bean plants the other day, they were only $3\frac{1}{2}$ inches tall. Today they are 5 inches tall. How many inches have they grown?

____

7. Sue is making two batches of cookies. She needs $\frac{2}{3}$ cup sugar for each one. How much sugar does she need in all?

____

8. We took 5 pies to the class picnic and had $1\frac{1}{6}$ pies left. How many pies were eaten?

____

9. Jill is $\frac{3}{4}$ inch taller than Sue. If Sue is $56\frac{3}{4}$ inches tall, how tall is Jill?

____

10. Last year Don set out some baby pine trees. They were only $5\frac{1}{2}$ inches tall. This year the trees grew $1\frac{1}{2}$ inches. How tall are they now?

____

11. Last week, Bob sold $1\frac{1}{2}$ dozen eggs to Mrs. Smith and $2\frac{1}{2}$ dozen to Mrs. Denton. How many dozen eggs did he sell?

____

12. Sally bought a half dozen sugar cookies, a half dozen ginger cookies, and a dozen and a half oatmeal cookies. How many dozens of cookies did she buy?

____

13. Linda's brother Terry is 17 years old. Linda is $11\frac{1}{2}$ years old. How many years older is Terry than Linda?

____

14. Sally is sending off two packages. One weighs $4\frac{3}{8}$ lb. and the other weighs $2\frac{5}{8}$ lb. How much do the two packages weigh together?

____

15. Sam and Bob had a snail race. Sam's snail crawled $7\frac{1}{4}$ inches. Bob's snail crawled $6\frac{3}{4}$ inches. By how many inches did Sam's snail win?

____

16. It is $2\frac{1}{10}$ miles to the crossroad from Bob's house and $2\frac{3}{10}$ miles farther on to Sam's house. How far does Bob live from Sam?

____

Go over your answers again. Do they seem sensible?

A Cross-Number Puzzle

1 6	2 1	3 9	4 9	■	5	6	■
7			■	8			■
9		■	10				■
11	■	12		■	13		14
15	16		■	17		■	18
■	19		20		■	21	
■	22			■	23		
■	24		■	25			

Here is a bigger cross-number puzzle than the other one you did.

Work the examples marked **Across,** and write your answers in the spaces across the puzzle. The first one has been done for you.

Then work the examples marked **Down.** Do these numbers match the numbers you have already written? If not, find your mistake.

Across	*Work Space*	*Down*	*Work Space*
1. 9826 − 3627		**1.** 83 × 842	
5. 8 × 9		**2.** 4 × 25	
7. 4515 ÷ 5		**3.** 100 − 7	
8. 96 + 37		**4.** $11\frac{3}{4} - 2\frac{3}{4}$	
9. 320 ÷ 4		**5.** 91 × 806	
10. 956 + 5882		**6.** 9000 − 6614	
11. $3\frac{7}{8} + 4\frac{1}{8}$		**8.** 1134 ÷ 63	
12. 456 ÷ 8		**10.** 136 − 69	
13. 1000 − 533		**12.** 74 × 716	
15. 1301 − 629		**14.** 84 × 835	
17. 4300 ÷ 50		**16.** 8943 − 1087	
18. $19\frac{7}{16} - 19\frac{7}{16}$		**17.** 581 ÷ 7	
19. 6956 + 1987		**20.** 1927 ÷ 41	
21. 1701 ÷ 21		**21.** 1441 − 575	
22. 1761 ÷ 3		**23.** 7470 ÷ 90	
23. 1840 − 976		**25.** $8\frac{1}{2} - 1\frac{1}{2}$	
24. 3029 − 2965			
25. 973 + 6387			

Two-Step Problems

There is a hidden question in each problem on this page. You must find this question and answer it before you can answer the written question.

Do your work in the margins and the spaces around the problems. Write the answers in the blanks.

1. Jean had \$3.42 in her bank. She spent 75¢ of this for a birthday present. The next day she put \$1 into her bank. How much money was in her bank then?

____

2. In three weeks Sam sold rabbits for \$1.60, \$2.40, and \$1.85. How much a week did he get on the average?

____

3. Bob and Sue are saving for a radio. Bob has saved \$5.80. Sue says she has saved half as much as Bob. How much have both of them saved together?

____

4. In the auditorium of Sally's school, there are 28 rows of seats with 16 seats in each row. At an assembly period, all but 19 seats were filled. How many people were there?

____

5. The heights of the five boys on Bill's basketball team are 58 inches, 62 inches, 64 inches, 59 inches, and 62 inches. What is their average height?

____

6. Mr. Lane bought 8 gallons of gasoline for his car at 26 cents a gallon. He paid for it with a five-dollar bill. How much change should he get?

____

7. Jean counted the miles on the road map. From Pleasant City to Reedsville was $15 + 17 + 15 + 23$ miles. The Lanes made the drive in two hours. How many miles an hour did they average?

____

8. For our watermelon party, we want to buy 3 watermelons costing 90¢ each. If 6 boys are to share the cost equally, how much should each boy pay?

____

9. There are 258 pages in the book Nora is reading. She has read 83 pages. If she reads 25 pages an hour, how many hours will it take Nora to finish the book?

____

10. Ellen bought $\frac{3}{4}$ lb. of candy mints and $1\frac{1}{4}$ lb. of mixed chocolates for her party. How much did she pay for all the candy if it cost 75¢ a pound?

____

11. Bob's hens laid 159 eggs last week and 189 eggs this week. How many dozen eggs did Bob get in both weeks?

____

12. One week, Bob got 53¢ a dozen for 13 dozen eggs. He sold \$5.80 worth of chickens. How much money did Bob take in that week?

____

Which Two Processes?

To solve each problem on this page, you must use **two** processes (addition, subtraction, multiplication, division). Under each problem, circle two letters to show which two processes you use to solve the problem. Then work the problem and write the answer in the blank.

---

1. Four boys are earning money to buy a six-dollar soccer ball. They have earned $3.84. How much more must each boy earn?

A S M D Answer ____________

2. Nineteen boys and girls in our room and 18 in Miss Blake's room have ordered bottles of milk. If milk costs 5 cents a bottle, how much milk money should be collected in both rooms?

A S M D Answer ____________

3. Jerry made up 20 packets of stamps with 12 stamps in each packet. He sold 7 packets. How many stamps are there in the packets that are left?

A S M D Answer ____________

4. Nora has 83 books to put on three shelves. If she puts 29 books on the first shelf and 35 books on the second shelf, how many books will be left for the third shelf?

A S M D Answer ____________

5. On a 4-day trip we spent $13.48 for gasoline. Our other expenses averaged $9.75 a day. How much a day did our trip cost, including gasoline?

A S M D Answer ____________

6. One week, Nora read to her grandfather for 12 hours. He paid her 25¢ an hour. Nora plans to spend $\frac{1}{4}$ of this money for books. How much will she spend on books?

A S M D Answer ____________

7. We started on a 148-mile trip at 7:30 a.m. We got there at 11:30. On the average, how many miles an hour did we drive?

A S M D Answer ____________

8. At the store, baseballs were reduced from $2 to $1.48. Bill's baseball team bought six baseballs at the lower price. How much money did they save?

A S M D Answer ____________

Page 143 provides enrichment material which can be used to extend concepts so far introduced.

Making Up Two-Step Problems

See if you can make up two-step problems. Write a question for each one to make it a two-step problem. Then work the problem and write the answer on the blank at the end.

1. In three days Don earned 75 cents, $1.10, and 65 cents. He spent $1.18 of this for a birthday present for his mother. ______________ .

____? ____________

2. Sally bought 3 pounds of meat at 69 cents a pound, and a loaf of bread for 18 cents. ____

____? ____________

3. In three games, Bill's baseball team scored 17 runs, 6 runs, and 14 runs. ____

____? ____________

4. Six boys brought 15 cents each to buy a watermelon costing one dollar. ____

____? ____________

5. On a 700-mile trip, the Lanes drove 193 miles the first day and 308 miles the second day. ____

____? ____________

6. Five girls are going to buy six 12-cent chocolate bars for a party.

____

____? ____________

7. Tom worked $\frac{3}{4}$ hour cleaning rugs and $2\frac{1}{4}$ hours cutting the lawn. His father paid him 35¢ an hour. ____

____? ____________

Using Measures in Two-Step Problems

To solve each of these two-step problems, you must know a measure number. In Problem 1, for instance, you must know that there are 5,280 feet in a mile. How many can you solve as quickies?

1. Bill's father climbed a mountain 13,057 feet high. How many more feet than 2 miles high is the mountain?

____

2. Sally is cutting arm bands to use in a play day at her school. How many arm bands, each 9 inches long, can she cut from a strip of cloth 3 yards long?

____

3. If a pint of ice cream serves 3 people, how many people can Ellen serve with 3 quarts of ice cream at her party?

____

4. This week Joe has practiced on his trumpet 35 minutes, 18 minutes, 23 minutes, and 20 minutes. How many more minutes than an hour has Joe practiced this week?

____

5. Sue made 3 pounds of candy for a candy sale. She put the candy in boxes with 8 ounces in each box. How many boxes of candy were there?

____

6. Don's father can buy oil for his truck for 35 cents a quart or $1.08 a gallon. How much money does he save on each gallon of oil by buying it in gallon cans instead of by the quart?

____

7. If Peggy's pony eats 3 quarts of oats a day, how many days will 3 bushels of oats last?

____

8. Sue's mother says a beef roast should cook 20 minutes for each pound. How many hours should a 6-pound roast stay in the oven?

____

9. Dick has a board 40 inches long. If he cuts off a piece two feet long, how many inches will be left?

____

10. Ann's brother Fred is reading a book about airplanes. Ann timed him and found he could read a page in 40 seconds. At this rate, how long will it take Fred to read 6 pages?

____

Test pages 5 and 6 are to be given following completion of this page.

Estimating With Round Numbers

1. Bill has $10. He is going to buy a sweater costing $6.89. He wants to know how much money he will have left.

First, he thinks that $6.89 is **about** seven dollars. He will have **about** $10 — $7, or about $________, left.

To find the exact amount, subtract $6.89 from $10. Bill will have exactly ________ left.

Estimate	*Exact*
$10.00	$10.00
7.00	6.89

In round numbers, $3.29 is $3 to the nearest dollar. Write each of these numbers below to the nearest dollar.

2. $7.98 ________ $9.75 ________

3. $2.06 ________ $4.86 ________

4. $13.24 ________ $33.63 ________

5. Mrs. Lane bought groceries costing $3.83. She gave the clerk $5.00. Estimate her change to the nearest dollar. Then find the exact change.

Estimate ________ Answer ________

6. Nora bought three books. She paid $1.97, $2.12, and $2.87 for them. Estimate the total cost by adding the three prices, each expressed as the nearest dollar. Then find the exact answer.

Estimate ________ Answer ________

7. Tom earned $11.76 in four weeks. In round numbers, how much a week did he make on the average? Divide to find the exact average.

Estimate ________ Answer ________

8. If an airplane goes 275 miles an hour, how many miles will it go in four hours?

Estimate ________ Answer ________

9. On a trip, we drove 867 miles in 3 days. To the nearest hundred, we drove ________ miles. Estimate the average number of miles we drove each day. Then find the exact average.

Estimate ________ Answer ________

10. The Lanes have started on a 413-mile trip. They have driven 195 miles. Estimate how many miles they still have to drive, and then find the exact number of miles.

Estimate ________ Answer ________

11. Early this summer, Bob had 195 chickens. During the summer, he sold 88 chickens. Estimate how many chickens Bob has left. Find the exact number.

Estimate ________ Answer ________

12. Is 651 nearer 600 or 700? ________

13. Write each number to the nearest hundred.

543 ________ 1362 ________ 2028 ________

14. When you see these prices in a store, how many dollars do you think?

$8.99 ________ $4.95 ________

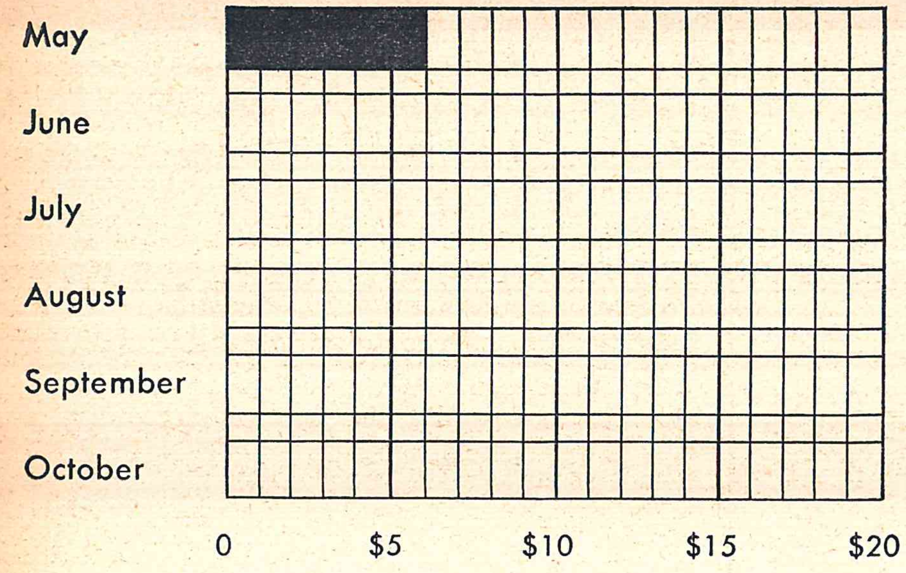
$14.89 ________ $7.13 ________

15. If you were just estimating, how would you think of the number 4,987?

____

Page 144 provides enrichment material which can be used to extend concepts so far introduced.

Using Round Numbers in Graphs



Don's Earnings from His Garden

1. Don made a bar graph to keep a record of how much money he made from his garden. Each space in his graph stood for $1.00.

In May, Don earned $5.79. Since this is about $6, Don shaded 6 spaces.

See if you can finish Don's graph by making the bars for the other five months. Here are Don's earnings.

May, $5.79; June, $8.95; July, $12.05; August, $18.86; September, $16.10; October, $10.04.

2. In what month did Don earn about twice as much as he did in May?

____

3. In what month did Don earn the most from his garden? ________________ In what month did he earn least? ________________

4. How much more did Don earn from his garden in August than in June? ________

5. About how much did Don make from his garden during the summer? ________

6. Fill in the bar graph at the right to show the heights of some well-known buildings. Each square stands for 100 feet.

The Empire State Building in New York is 1,250 ft. high; so you fill in $12\frac{1}{2}$ squares. The Chrysler Building is 1,046 ft. high. This is about 1,050 ft., so you fill in

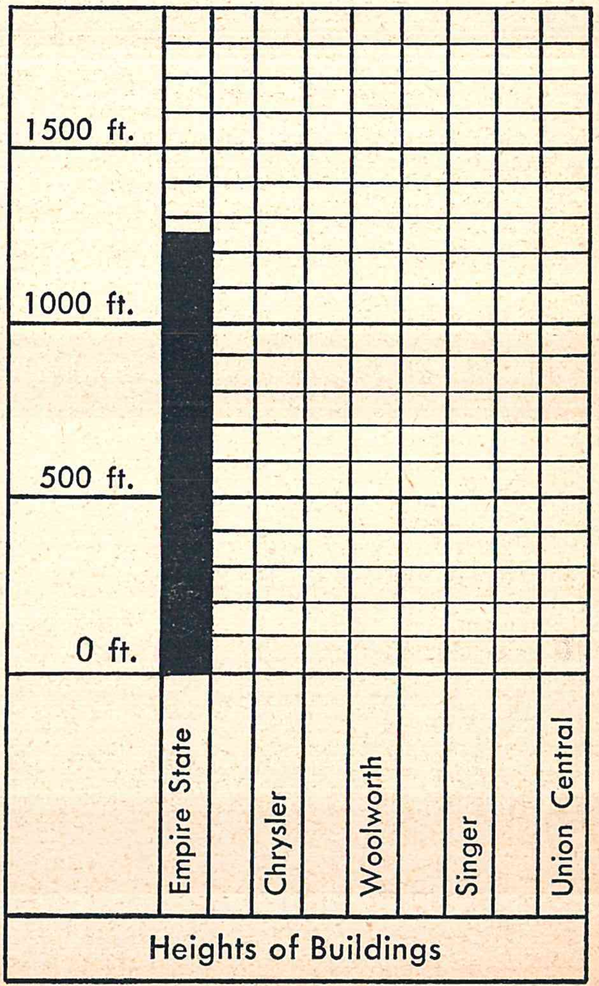
________ squares.

7. The Woolworth Building is 792 ft. high. In round numbers to the nearest hundred, this is 800 ft. How many squares do you fill in? ________

8. The Singer Building is 612 ft. high. How many feet is this to the nearest hundred? ________ How many squares do you fill in on the graph? ________

9. The Union Central Building in Cincinnati, Ohio, is 495 feet high. How many feet is this to the nearest hundred? ________ How many squares on the graph do you fill in? ________

10. The Woolworth Building is **about** how many feet higher than the Union Central Building? Round your answer to the nearest hundred. ________



Sam's Fishing

1. Sam caught three fish. The first weighed $2\frac{3}{4}$ lb., the second $3\frac{1}{4}$ lb., and the third $3\frac{3}{4}$ lb. Find the total weight of the three fish.

____

2. One day Bob went fishing with Sam. Bob's fishing pole was 5 ft. long. Sam's was $4\frac{2}{3}$ ft. long. How much longer was Bob's fishing pole than Sam's?

____

How many inches is this? ________

3. Bob caught two fish. They weighed $2\frac{1}{4}$ lb. and $1\frac{1}{4}$ lb. Sam caught only one fish, but it weighed 4 lb. How much heavier was Sam's fish than the two fish Bob caught?

____

4. The largest fish Sam caught last summer was $18\frac{3}{4}$ in. long. This year he caught a fish $20\frac{1}{4}$ in. long. How much longer was the fish he caught this year than the fish he caught last year?

____

5. Sam guessed that a fish he caught weighed 3 lb. When he weighed it, he found that it weighed only $2\frac{3}{8}$ lb. How much less did the fish weigh than Sam guessed it did?

____

How many ounces was this? (Remember, 2 oz. = $\frac{2}{16} = \frac{\ }{8}$ lb.)

____

6. Sam threw back all fish less than 10 in. long. How much too short was a fish $8\frac{7}{8}$ in. long?

____

Last summer Sam's father took him to the mountains to fish for trout. They did not have scales with them to weigh the fish they caught, but they had this table showing how much trout of different lengths weigh.

Length	*Weight*
9 in.	5 oz.
10 in.	7 oz.
11 in.	9 oz.
12 in.	12 oz.
13 in.	15 oz.
14 in.	1 lb. 3 oz.
15 in.	1 lb. 7 oz.
16 in.	1 lb. 12 oz.
17 in.	2 lb. 2 oz.
18 in.	2 lb. 8 oz.
19 in.	2 lb. 15 oz.
20 in.	3 lb. 7 oz.

7. Sam caught a trout 16 in. long. Find its weight in the table. ________________

Find the weights of these fish that Sam and his father caught.

8. 11 in. long ________________

9. 19 in. long ________________

10. 15 in. long ________________

11. 17 in. long ________________

12. How much heavier is a trout 13 in. long than a trout 9 in. long? ________ What fraction of a pound is this? ________

Comparing Numbers

These problems are all quickies. Just write down the answers.

1. Ann collects dolls. She has a doll 18 inches long. She has another doll 6 inches long. The large doll is how much **longer** than the small doll?

18 in. − 6 in. = ______ in.

2. The small doll is how much **shorter** than the large doll? ______ in.

3. The large doll is how many **times** as long as the small doll?

18 ÷ 6 = ______

4. The length of the small doll is what **fraction** of the length of the large doll?

$\frac{6}{18} = \frac{3}{9} =$ ______

Large Doll			
Small Doll			
Inches 0	6	12	18

5. Draw a bar graph to show the lengths of the large doll and the small doll.

6. The pupils in Ann's room gave a puppet show. It took them an hour to set up the show and only 10 minutes to take it down.

a. How many minutes longer did it take them to set up the show than to take it down? ______

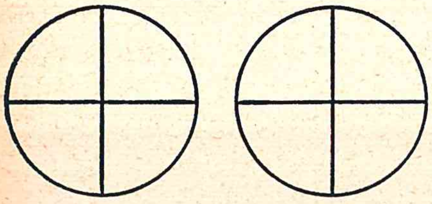
b. How many times as long did it take to put up the show as to take it down? ______

c. It took only one ______ as long to take down the show as it took to set it up.

7. Peggy weighs 90 lb. Her pony weighs 360 lb. The pony weighs ______ times as much as Peggy. It weighs ______ lb. more than Peggy. Peggy weighs one ______ as much as the pony.

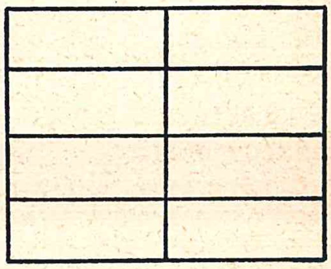
8. Peggy is 12 years old. Her cousin Doris is 24 years old. Peggy's cousin is ______ times as old as Peggy. She is ______ years older than Peggy. Peggy is only ______ as old as her cousin.

Showing Addition and Subtraction of Fractions



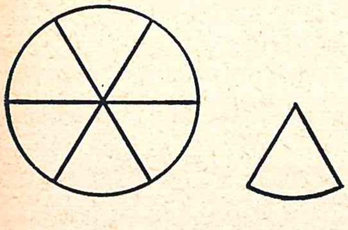
1. Shade the circles at the left to show $2 - 1\frac{1}{4}$.

$2 - 1\frac{1}{4} =$ ______



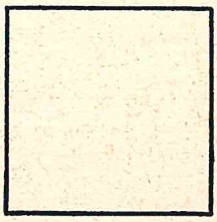
2. Shade the rectangle at the right to show $\frac{5}{8} + \frac{1}{8}$.

$\frac{5}{8} + \frac{1}{8} =$ ______



3. At the left are $1\frac{1}{6}$ circles. Shade $\frac{5}{6}$ circle to show $1\frac{1}{6} - \frac{5}{6}$.

$1\frac{1}{6} - \frac{5}{6} =$ ______



4. Shade the square at the right to show the sum of $\frac{3}{8}$ and $\frac{1}{8}$.

$\frac{3}{8} + \frac{1}{8} =$ ______

5. Change $\frac{10}{16}$ to lowest terms. ______

6. Circle the fractions that are in lowest terms.

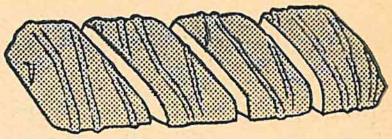
$\frac{1}{2}$ $\frac{3}{4}$ $\frac{4}{16}$ $\frac{5}{10}$ $\frac{4}{9}$

7. $\frac{2}{4} = \frac{1}{2}$. $\frac{3}{6} = \frac{1}{2}$. Write another fraction that is equal to $\frac{1}{2}$. ______

Changing Fractions To Add Them

1. Jean had a candy bar. She ate $\frac{1}{4}$ of it, and gave $\frac{1}{2}$ of it to Ann and Ellen. To find what part of the bar was gone, add $\frac{1}{4}$ and $\frac{1}{2}$.

Before you can add these fractions, think of $\frac{1}{2}$ as $\frac{2}{4}$. Then add $\frac{1}{4}$ and $\frac{2}{4}$. ______ of the bar was gone.



2. Don is planning his garden for next year. He is going to plant tomatoes in $\frac{1}{4}$ of it and corn in $\frac{3}{8}$ of it.

To find what part of his garden will be in tomatoes and corn, add $\frac{1}{4}$ and $\frac{3}{8}$. Change $\frac{1}{4}$ to $\frac{2}{8}$; then add $\frac{2}{8}$ and $\frac{3}{8}$. $\frac{1}{4} + \frac{3}{8} =$ ______.

Tomatoes	
Corn	Corn
	Corn

3. Sue had measured $\frac{1}{2}$ cup of sugar for a recipe. Her mother told her to put in $\frac{1}{8}$ cup more.

To find what part of a cup Sue had then, add $\frac{1}{2}$ and $\frac{1}{8}$. First, change $\frac{1}{2}$ to $\frac{4}{8}$. Then add the numerators. Sue had ______ cup of sugar.

$$\begin{aligned} \tfrac{1}{2} &= \tfrac{4}{8} \\ \tfrac{1}{8} &= \underline{\tfrac{1}{8}} \end{aligned}$$

When you change $\frac{1}{2}$ to $\frac{2}{4}$, or $\frac{1}{4}$ to $\frac{2}{8}$, or $\frac{1}{2}$ to $\frac{4}{8}$, you change the fractions to **higher terms.**

To change a fraction to higher terms, multiply **both** numerator and denominator **by the same number.**

4. To change $\frac{1}{4}$ to 12ths, multiply both terms of $\frac{1}{4}$ by 3. $\frac{1}{4} = \frac{\quad}{12}$.

Change these fractions to higher terms.

5. $\frac{1}{2} = \frac{\quad}{6}$ **6.** $\frac{2}{3} = \frac{\quad}{6}$ **7.** $\frac{3}{4} = \frac{\quad}{8}$ **8.** $\frac{2}{3} = \frac{\quad}{12}$ **9.** $\frac{3}{4} = \frac{\quad}{12}$

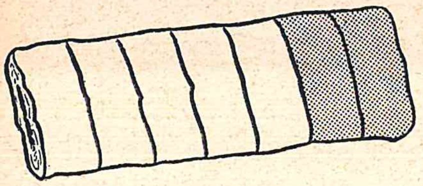
10. Bob sold $\frac{3}{4}$ doz. eggs to one customer and $\frac{1}{2}$ dozen to another customer. To find how many dozen eggs he sold, add $\frac{3}{4}$ and $\frac{1}{2}$. Change $\frac{1}{2}$ to fourths before you add. Change your answer to a mixed number.

$$\begin{aligned} \tfrac{3}{4} &= \tfrac{3}{4} \\ \tfrac{1}{2} &= \underline{\tfrac{\quad}{\quad}} \\ & \tfrac{\quad}{4} = \end{aligned}$$

Add.

	a	b	c	d	e
11.	$\frac{5}{8}$ $\frac{1}{4}$	$\frac{1}{2}$ $\frac{3}{8}$	$\frac{1}{2}$ $\frac{1}{6}$	$\frac{1}{6}$ $\frac{2}{3}$	$\frac{1}{2}$ $\frac{7}{8}$
12.	$\frac{3}{4}$ $\frac{3}{8}$	$\frac{7}{8}$ $\frac{1}{4}$	$\frac{1}{4}$ $\frac{7}{12}$	$\frac{5}{12}$ $\frac{1}{2}$	$\frac{3}{4}$ $\frac{11}{12}$

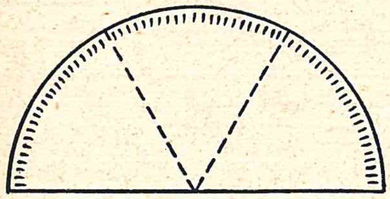
Changing Fractions To Subtract Them



1. Bill had $\frac{7}{8}$ of a chocolate bar. Then he ate $\frac{1}{4}$ of the bar.

To find what fraction of a bar was left, subtract $\frac{1}{4}$ from $\frac{7}{8}$.

Think of $\frac{1}{4}$ as $\frac{2}{8}$. Then subtract $\frac{2}{8}$ from $\frac{7}{8}$. $\frac{7}{8} - \frac{2}{8} =$ ______



2. For lunch, Sally's mother served a pie, cut in 6 pieces. Half the pie was left. When Sally came home from school, her mother said she could have $\frac{1}{6}$ of the pie. Shade $\frac{1}{6}$ of the pie to show that Sally ate it.

To find what fraction of the whole pie is now left, subtract $\frac{1}{6}$ from $\frac{1}{2}$. Change $\frac{1}{2}$ to $\frac{3}{6}$ and subtract $\frac{1}{6}$ from $\frac{3}{6}$.

$\frac{1}{2} - \frac{1}{6} =$ ______. Is your answer in lowest terms?

$\frac{7}{8} =$

$\frac{1}{2} =$

______

3. Mrs. Gray had $\frac{7}{8}$ cup of sugar. She used $\frac{1}{2}$ cup for some cookies. To find what part of a cup she had left, subtract $\frac{1}{2}$ from $\frac{7}{8}$. Change $\frac{1}{2}$ to 8ths before you subtract.

Mrs. Gray had ______ cup of sugar left.

4. Nancy promised to practice $\frac{3}{4}$ hour. She has practiced $\frac{1}{2}$ hour. What part of an hour must she still practice?

______

Subtract.

	a	*b*	*c*	*d*	*e*
5.	$\frac{1}{2}$ $\frac{3}{8}$	$\frac{5}{8}$ $\frac{1}{2}$	$\frac{3}{4}$ $\frac{1}{8}$	$\frac{7}{8}$ $\frac{3}{4}$	$\frac{3}{4}$ $\frac{3}{8}$
6.	$\frac{1}{2}$ $\frac{1}{4}$	$\frac{1}{4}$ $\frac{1}{8}$	$\frac{5}{6}$ $\frac{1}{3}$	$\frac{5}{6}$ $\frac{2}{3}$	$\frac{5}{6}$ $\frac{1}{2}$
7.	$\frac{5}{12}$ $\frac{1}{3}$	$\frac{5}{12}$ $\frac{1}{4}$	$\frac{1}{2}$ $\frac{1}{12}$	$\frac{3}{4}$ $\frac{7}{12}$	$\frac{11}{12}$ $\frac{1}{2}$
8.	$\frac{4}{9}$ $\frac{1}{3}$	$\frac{8}{9}$ $\frac{2}{3}$	$\frac{3}{8}$ $\frac{1}{16}$	$\frac{7}{16}$ $\frac{1}{4}$	$\frac{1}{2}$ $\frac{5}{16}$

Page 145 provides enrichment material which can be used to extend concepts so far introduced.

Adding Mixed Numbers

1. Don's home is $2\frac{1}{2}$ miles from school. Dick's home is $3\frac{7}{10}$ miles from school in the opposite direction.

To find how far apart the two boys live, add $2\frac{1}{2}$ and $3\frac{7}{10}$. Change the fractions to tenths and add. Change $\frac{12}{10}$ to a mixed number ($1\frac{1}{5}$) and add it to 5. The boys live ______ miles apart.

$$\begin{array}{rcr} 2\frac{1}{2} & = & 2\frac{5}{10} \\ 3\frac{7}{10} & = & 3\frac{7}{10} \\ \hline & & 5\frac{12}{10} \end{array}$$

Add these mixed numbers.

	a	*b*	*c*	*d*
2.	$2\frac{3}{8}$ $1\frac{1}{2}$	$3\frac{2}{3}$ $4\frac{1}{6}$	$3\frac{7}{12}$ $2\frac{1}{4}$	$2\frac{1}{2}$ $2\frac{5}{8}$
3.	$1\frac{1}{2}$ $\frac{7}{8}$	$3\frac{5}{8}$ $4\frac{3}{4}$	$6\frac{5}{8}$ $4\frac{1}{4}$	$7\frac{5}{6}$ $2\frac{1}{2}$
4.	$2\frac{3}{10}$ $5\frac{1}{2}$	$3\frac{4}{5}$ $1\frac{7}{10}$	$2\frac{5}{12}$ $\frac{3}{4}$	$5\frac{1}{2}$ $\frac{7}{12}$

5. Don sold $\frac{3}{4}$ dozen ears of corn Friday, $1\frac{1}{2}$ dozen ears on Saturday, and $2\frac{3}{4}$ dozen ears on Monday.

Add $\frac{3}{4}$, $1\frac{1}{2}$, and $2\frac{3}{4}$ to find how many dozen ears of corn Don sold. Make all the fractions fourths and add. Change $\frac{8}{4}$ to a whole number and add it to 3.

Don sold ______ dozen ears of corn.

$$\begin{array}{rcr} \frac{3}{4} & = & \frac{3}{4} \\ 1\frac{1}{2} & = & 1\frac{2}{4} \\ 2\frac{3}{4} & = & 2\frac{3}{4} \\ \hline & & 3\frac{8}{4} = \end{array}$$

Add.

	a	*b*	*c*	*d*
6.	$2\frac{5}{8}$ $3\frac{1}{2}$ $1\frac{3}{4}$	$5\frac{1}{6}$ $2\frac{1}{3}$ $2\frac{1}{2}$	$1\frac{3}{10}$ $3\frac{1}{2}$ $2\frac{7}{10}$	$4\frac{3}{4}$ $2\frac{1}{12}$ $3\frac{1}{2}$
7.	$\frac{5}{12}$ $1\frac{1}{2}$ $2\frac{1}{3}$	$3\frac{1}{3}$ $1\frac{5}{6}$ $1\frac{5}{12}$	$4\frac{1}{4}$ $2\frac{3}{16}$ $1\frac{7}{8}$	$2\frac{5}{6}$ $5\frac{1}{2}$ $8\frac{1}{3}$

Subtracting With Mixed Numbers

$$\begin{array}{rcl} 5\frac{1}{2} & = & 5\frac{2}{4} \\ 3\frac{1}{4} & = & 3\frac{1}{4} \\ \hline & & \\ \hline \end{array}$$

1. Bob sold two chickens. One weighed $5\frac{1}{2}$ lb. and the other weighed $3\frac{1}{4}$ lb. Subtract to find how much more the first chicken weighed than the second.

$$5\frac{1}{2} - 3\frac{1}{4} = \underline{\qquad}$$

You can check subtraction of fractions just as you check subtraction of whole numbers. To check this example, add your answer to $3\frac{1}{4}$. Then follow the arrow. The sum should be $5\frac{2}{4}$. $5\frac{2}{4} = 5\frac{1}{2}$.

Subtract and check.

	a	*b*	*c*	*d*
2.	$\begin{array}{r}3\frac{1}{2}\\2\frac{3}{8}\\\hline\end{array}$	$\begin{array}{r}4\frac{5}{8}\\1\frac{1}{4}\\\hline\end{array}$	$\begin{array}{r}7\frac{3}{4}\\3\frac{3}{8}\\\hline\end{array}$	$\begin{array}{r}8\frac{5}{6}\\2\frac{1}{2}\\\hline\end{array}$
3.	$\begin{array}{r}4\frac{3}{4}\\2\frac{5}{12}\\\hline\end{array}$	$\begin{array}{r}9\frac{9}{10}\\5\frac{1}{2}\\\hline\end{array}$	$\begin{array}{r}6\frac{1}{2}\\3\frac{1}{12}\\\hline\end{array}$	$\begin{array}{r}10\frac{11}{12}\\5\frac{3}{4}\\\hline\end{array}$

$$\begin{array}{rcccl} 4\frac{1}{2} & = & 4\frac{4}{8} & = & 3\frac{12}{8} \\ 3\frac{7}{8} & = & 3\frac{7}{8} & = & 3\frac{7}{8} \\ \hline & & & & \\ \hline \end{array}$$

4. Sally bought $4\frac{1}{2}$ yards of material to make a dress. She found that she needed only $3\frac{7}{8}$ yards. To find what part of a yard she had left, subtract $3\frac{7}{8}$ from $4\frac{1}{2}$.

Finish the work at the left, and follow the arrow to check your answer. Sally had ______ yd. left.

Subtract and check.

5.	$\begin{array}{r}6\frac{1}{2}\\2\frac{3}{4}\\\hline\end{array}$	$\begin{array}{r}5\frac{1}{4}\\3\frac{1}{2}\\\hline\end{array}$	$\begin{array}{r}8\frac{1}{8}\\4\frac{1}{2}\\\hline\end{array}$	$\begin{array}{r}9\frac{3}{8}\\2\frac{3}{4}\\\hline\end{array}$
6.	$\begin{array}{r}7\frac{1}{2}\\6\frac{5}{6}\\\hline\end{array}$	$\begin{array}{r}2\frac{1}{2}\\\frac{5}{8}\\\hline\end{array}$	$\begin{array}{r}12\frac{3}{10}\\8\frac{1}{2}\\\hline\end{array}$	$\begin{array}{r}20\frac{5}{12}\\13\frac{3}{4}\\\hline\end{array}$

Two-Step Quickies

Use your pencil to write only the answers to these quickies.

1. Peggy bought an ice cream cone costing 12¢. She gave the clerk a dime and a nickel. How much change should she get?

2. Ann's spring vacation is 2 weeks long. It starts on April 4. On what date does it end?

3. Don pulled 30 beets in his garden. He gave his mother a dozen of them and wants to tie the rest in 3 equal bunches. How many beets should he put in each bunch?

4. Lemons are 2 for 9¢. How much must Ellen pay for 8 lemons to make lemonade for her party?

5. Jill picked 48 roses. She put them in bunches with 8 roses in each bunch and sold them for 10¢ a bunch. How much did she get?

6. Mrs. Lane bought a dozen eggs. She used 3 eggs to make a cake and 4 eggs to make an omelet. How many eggs did she have left?

7. Jill's mother baked 24 rolls. She let the girls take one fourth of them for a supper on the lawn. How many rolls were left?

8. Sam's fish weighed 2 lb. Bob's fish weighed 12 oz. How many ounces heavier was Sam's fish than Bob's?

Money Numbers

Do you remember how to do examples with money numbers? Do what the signs tell you to do.

1. 37 × $2.68
2. $10 − $4.81
3. $3.08 + $ .94
4. $7.50 ÷ 25

---

5. $2 + $4.67
6. 104 × $6.05
7. $9.12 − $8.50
8. $8.28 ÷ 18

---

9. $20.48 ÷ 32
10. $31.50 + $147
11. $1000 − $867
12. 25 × $3.88

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.

Changing Fractions

The examples on this page will help you remember three ways to change fractions. You can change fractions to **higher** terms, to **lowest** terms, or to a **whole number** or a **mixed number.**

Change each of the following fractions to **higher terms.**

1. Change $\frac{3}{4}$ to eighths. $\frac{3}{4} = \frac{}{8}$

2. Change $\frac{1}{3}$ to twelfths. $\frac{1}{3} =$

3. Change $\frac{3}{5}$ to tenths. $\frac{3}{5} =$

4. Change $\frac{5}{6}$ to twelfths. $\frac{5}{6} =$

5. $\frac{1}{2} = \frac{}{8}$

6. $\frac{2}{3} = \frac{}{6}$

7. $\frac{3}{4} = \frac{}{12}$

8. $\frac{1}{2} = \frac{}{12}$

9. $\frac{3}{4} = \frac{}{16}$

10. $\frac{7}{8} = \frac{}{16}$

11. $\frac{3}{10} = \frac{}{20}$

12. $\frac{5}{7} = \frac{}{14}$

Change each of the following fractions to **lowest terms.**

	a	*b*	*c*	*d*	*e*
13.	$\frac{2}{4} =$ ____	$\frac{2}{6} =$ ____	$\frac{4}{6} =$ ____	$\frac{3}{6} =$ ____	$\frac{4}{8} =$ ____
14.	$\frac{6}{8} =$ ____	$\frac{6}{10} =$ ____	$\frac{6}{12} =$ ____	$\frac{4}{12} =$ ____	$\frac{9}{12} =$ ____

Change each of the following fractions to a **whole number** or a **mixed number** in **lowest terms.**

15.	$\frac{6}{4} =$ ____	$\frac{7}{4} =$ ____	$\frac{6}{6} =$ ____	$\frac{10}{8} =$ ____	$\frac{10}{6} =$ ____
16.	$\frac{8}{4} =$ ____	$\frac{12}{8} =$ ____	$\frac{9}{6} =$ ____	$\frac{20}{8} =$ ____	$\frac{16}{12} =$ ____

Which Is Larger?

Draw a line around the larger number in each pair.

1. $\frac{1}{2}$ ft. or 8 in.

2. $\frac{1}{4}$ lb. or 3 oz.

3. $\frac{1}{4}$ hr. or 20 min.

4. $\frac{1}{3}$ yr. or 3 mo.

5. $\frac{1}{2}$ gal. or 3 qt.

6. $\frac{1}{4}$ yd. or 10 in.

7. $\frac{1}{4}$ or $\frac{1}{6}$

8. $\frac{1}{5}$ or $\frac{1}{3}$

9. $\frac{1}{2}$ or $\frac{1}{3}$

10. $\frac{3}{4}$ or $\frac{1}{4}$

11. $\frac{3}{8}$ or $\frac{7}{8}$

12. $\frac{7}{12}$ or $\frac{5}{12}$

13. $\frac{1}{6}$ doz. or $\frac{1}{3}$ doz.

14. $\frac{3}{4}$ doz. or $\frac{1}{2}$ doz.

15. $\frac{1}{2}$ lb. or $\frac{3}{8}$ lb.

16. $\frac{1}{3}$ hr. or $\frac{2}{3}$ hr.

17. $\frac{3}{4}$ yd. or $\frac{1}{2}$ yd.

18. $\frac{7}{8}$ in. or $\frac{3}{4}$ in.

---

19. Which is longer, $\frac{7}{8}$ in. or $\frac{9}{16}$ in.? ____

20. Which is longer, $\frac{5}{6}$ ft. or $\frac{11}{12}$ ft.? ____

21. Which is longer, $\frac{3}{4}$ yd. or $\frac{25}{36}$ yd.? ____

Page 146 provides enrichment material which can be used to extend concepts so far introduced.

Quickies With Fractions

See if you can work these quickies without using your pencil except to write the answers.

1. Mrs. Gray cut a meat loaf in 8 equal pieces and served 5 pieces. What fraction of the meat loaf did she serve?

______

2. Jim and Jerry each bought $\frac{1}{4}$ pound of candy. How much candy did they buy together?

______

3. Mrs. Lane wants to make a pudding. The recipe calls for 2 cups of milk. Mrs. Lane has only $\frac{3}{4}$ cup of milk. How much more milk does she need?

______

4. Sam caught two trout. One weighed $1\frac{1}{8}$ lb. The other weighed $1\frac{1}{4}$ lb. Find the total weight of the two trout.

______

5. How many inches longer is a fish 14 inches long than a fish which is $12\frac{1}{2}$ inches long?

______

6. Don worked $1\frac{1}{2}$ hr. weeding his garden and $\frac{3}{4}$ hr. cutting the grass. How many hours did he work in all?

______

7. It is $\frac{3}{10}$ of a mile from Jean's house to the store and $\frac{1}{2}$ mile farther from the store to the church. How far is it from Jean's house to the church?

______

8. Nancy wants to practice her music 1 hour today. She practiced $\frac{1}{4}$ hour this morning and $\frac{1}{2}$ hour this afternoon. What fraction of an hour must she still practice?

______

Practice With Fractions

Do what the sign tells you to do.

1. $\frac{3}{4} + \frac{1}{2} =$ ______

2. $\frac{1}{6} + \frac{2}{3} =$ ______

3. $\frac{7}{8} + \frac{1}{4} =$ ______

4. $\frac{2}{3} - \frac{1}{6} =$ ______

5. $\frac{3}{4} - \frac{1}{8} =$ ______

6. $\frac{7}{8} - \frac{1}{2} =$ ______

7. $\frac{5}{8} - \frac{1}{4} =$ ______

8. $\frac{7}{8} + \frac{3}{4} =$ ______

9. $\frac{5}{6} - \frac{2}{3} =$ ______

Add.

10. $\begin{array}{r} 3\frac{5}{8} \\ \underline{2\frac{1}{4}} \end{array}$

11. $\begin{array}{r} 4\frac{7}{10} \\ \underline{3\frac{1}{2}} \end{array}$

12. $\begin{array}{r} 6\frac{3}{4} \\ \underline{3\frac{7}{12}} \end{array}$

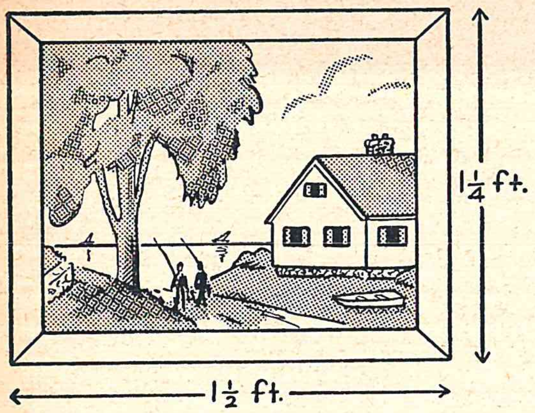
Subtract and check.

13. $\begin{array}{r} 5\frac{1}{8} \\ \underline{4\frac{1}{2}} \end{array}$

14. $\begin{array}{r} 7\frac{11}{12} \\ \underline{3\frac{2}{3}} \end{array}$

15. $\begin{array}{r} 10\frac{1}{2} \\ \underline{4\frac{9}{10}} \end{array}$

Finding Perimeters


$1\frac{1}{4}$ ft.
$1\frac{1}{2}$ ft.

1. Jean likes to paint pictures. Her father made a frame for one of Jean's pictures. The frame was to be $1\frac{1}{2}$ ft. long and $1\frac{1}{4}$ ft. wide on the outside.

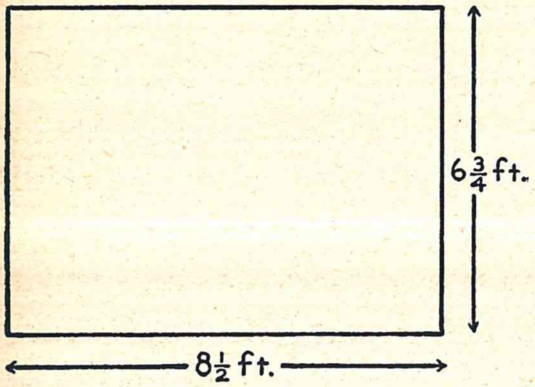
To find the length of the piece of wood needed to make the frame, add the two lengths and the two widths, and then add the two sums. The picture frame is a rectangle.

The two lengths are $1\frac{1}{2}$ ft. + $1\frac{1}{2}$ ft. = ______ ft.

The two widths are $1\frac{1}{4}$ ft. + $1\frac{1}{4}$ ft. = ______ ft.

Add the sums. The distance around the frame is ______ ft.

The distance around a rectangle—or a square, or a triangle—is called its **perimeter.**

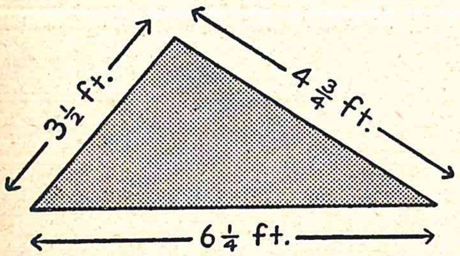


2. Sam wants to put a wire fence around his rabbit yard. The yard is $8\frac{1}{2}$ ft. long and $6\frac{3}{4}$ ft. wide. Find how many feet of fence Sam needs for his rabbit yard.

$8\frac{1}{2}$ ft. + $8\frac{1}{2}$ ft. = ______ ft.

$6\frac{3}{4}$ ft. + $6\frac{3}{4}$ ft. = ______ ft.

The perimeter = ______ ft. Sam needs ______ ft. of fence.



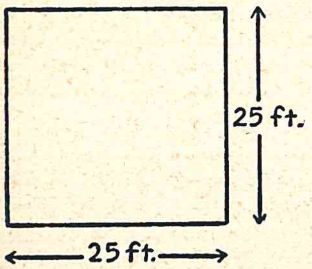
3. At the left is a picture of one of Jill's flower beds. It has three straight sides. It is a triangle. To find the perimeter of the triangle, add the lengths of the three sides. How far around the flower bed is it?

______

Jill is going to plant pansies around the bed. If she puts in 2 plants for every foot, how many plants will she need? (Count 1 plant for the $\frac{1}{2}$ ft.)

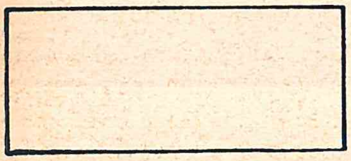
______

$$\begin{array}{r} 3\frac{1}{2} \\ 4\frac{3}{4} \\ \underline{6\frac{1}{4}} \end{array}$$



4. Bob's chicken yard is a square. All four sides are equal. Each side is 25 ft. long. You can find the perimeter of this square by adding 25 ft., 25 ft., 25 ft., and 25 ft. Can you find it in a shorter way?

The perimeter of the square is ______ ft.

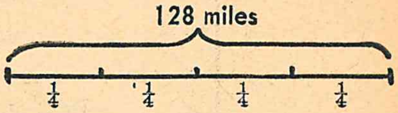


5. Measure the length and width of this rectangle, and find its perimeter.

The perimeter is ______ in.

Using Pictures for Problems

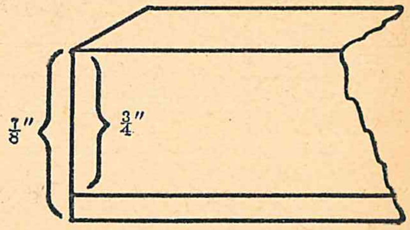
Drawing pictures will often help you understand problems better.



1. The Lanes have started on a 128-mile drive. Mr. Lane said they would eat their lunch when they had gone $\frac{3}{4}$ of the way. Jean drew this picture to help her find $\frac{3}{4}$ of 128 miles.

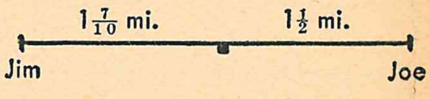
First she divided 128 by 4 to find $\frac{1}{4}$ of 128. Then she multiplied by 3 to find 3 fourths.

$\frac{3}{4}$ of 128 miles = ______ miles



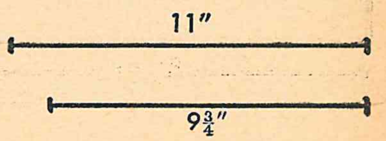
2. Dick has a board $\frac{7}{8}''$ ($\frac{7}{8}$ of an inch) thick. He wants to know how much he must cut off with his plane so that the board will be $\frac{3}{4}''$ thick. His picture shows him that he must subtract $\frac{3}{4}$ from $\frac{7}{8}$.

$\frac{7}{8}'' - \frac{3}{4}'' =$ ______$''$



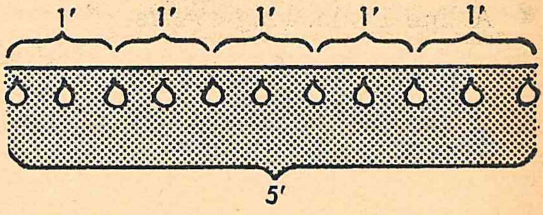
3. Jim lives $1\frac{7}{10}$ miles west of the school. Joe lives $1\frac{1}{2}$ miles east of the school. The picture shows that you must add $1\frac{7}{10}$ mi. and $1\frac{1}{2}$ mi. to find how far apart the boys live.

They live __________ miles apart.



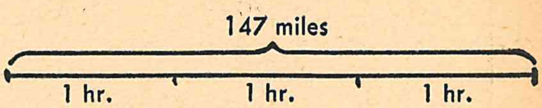
4. At noon one day in March, Tom measured the length of the shadow of a stick 1 foot high. It was 11 inches. Some days later the shadow was only $9\frac{3}{4}''$ long. He kept a record of his measurements by drawing lines to show each length. This shows that to find how much shorter the second shadow was, he must subtract $9\frac{3}{4}''$ from 11".

$11'' - 9\frac{3}{4}'' =$ ______$''$



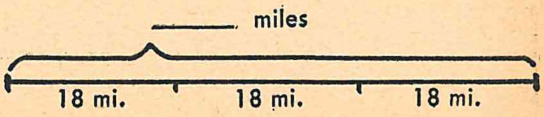
5. Jill is going to plant some flower bulbs 6" apart. She wants to know how many bulbs she can plant in a row 5' (5 feet) long. She drew this picture to help her find out. How many bulbs can she plant in a 5-foot row with 1 bulb at each end of the row? ______

How many bulbs could she plant in a 20-foot row? Draw a picture on another paper. ______



6. The train on which Sue was riding went 147 miles in 3 hours. Sue drew this picture to help her find the average rate per hour. How many miles an hour did the train average?

______



7. Our car goes 18 miles on a gallon of gasoline. The picture shows us how to find how far we can go on 3 gallons of gasoline. We can go ______ miles.

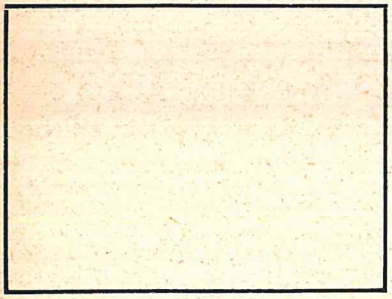
Reading Scale Drawings

1. Jill made this drawing to show the flower bed in which she had planted asters. It is a **scale drawing.** Each inch in the drawing stands for 4 feet of the flower bed. The scale is: 1″ = 4′.

The drawing is 1 inch wide. That means the flower bed is really 4 feet wide.

The drawing is 2 inches long. The flower bed is 2 × 4 or ______ feet long.

The perimeter of the flower bed is ______ feet.



2. Bill made this scale drawing of the dining room in his house. The scale is 1″ to 8′.

The drawing is 2″ long. Then the dining room is 2 × 8 or ______ ft. long.

The drawing is $1\frac{1}{2}$″ wide. So the width of the dining room is

$1\frac{1}{2} \times 8 = 8 + 4 =$ ______ ft.

On a scale drawing where 1″ = 12′:

3. A line $\frac{1}{2}$ in. long stands for $\frac{1}{2}$ of 12 or ______ ft.

4. A line $\frac{1}{4}$ in. long stands for $\frac{1}{4}$ of 12 or ______ ft.

5. A line $\frac{3}{4}$ in. long stands for $\frac{3}{4}$ of 12 or ______ ft.

6. A line $1\frac{1}{2}$ in. long stands for $1\frac{1}{2} \times 12 = 12 + 6 =$ ______ ft.

7. A line $1\frac{3}{4}$ in. long stands for $1\frac{3}{4} \times 12 = 12 + 9 =$ ______ ft.

8. A line $2\frac{1}{2}$ in. long stands for $2\frac{1}{2} \times 12 = 24 + 6 =$ ______ ft.

---

9. These lines are drawn to a scale of 1″ = 8′. Measure each line, and after it write the number of feet it stands for.

__________ __________ ft.

____________________ __________ ft.

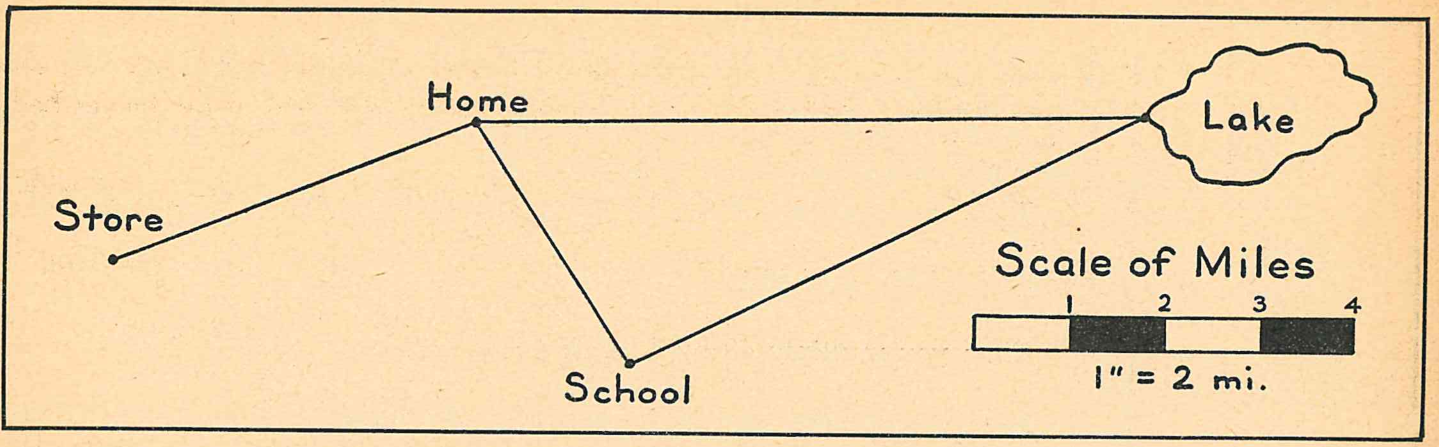
__________________________________ __________ ft.

____ __________ ft.

10. A room is 15 feet wide and 18 feet long. If you made a scale drawing of this room and let 1″ = 3′, how many inches wide would your drawing be? ______

How many inches long would it be? ______

Using Scale Maps



1. Sam lives in the country. He drew this scale map to show his cousin how far he lives from the store, the school, and the lake where he goes fishing. The scale is 1 inch to 2 miles.

On Sam's map, the line from his home to the school is $1\frac{1}{2}$ in. Since 1 inch = 2 miles, the distance from Sam's house to the school is $1\frac{1}{2} \times 2$, or ______ miles.

2. Measure the line from Sam's home to the store. It is ______ in. long. For how many miles does this stand? ______

3. The line from the school to the lake is ______ in. long. This stands for ______ miles.

4. Find how many miles it is from Sam's home to the lake. ______

5. Jean Lane has a road map of Ohio. The scale is 1″ = 15 miles. On the map, Ohio is about 16″ wide. About how many miles wide is it? ______

Up and down, the greatest length of Ohio is about 14 inches. About how many miles is this? ______

6. On the same map, Jean measured Indiana. It was about 10″ across, and about 18″ up and down. Jean says Indiana is about ______ miles wide and ______ miles long in its longest part.

7. Tom is making a big scale map of the school grounds. The school stands on a piece of land that is 650 feet wide and 940 feet long. If Tom uses a scale of 1″ = 20′, how wide will his map be? ______ How long will it be? ______

Page 147 provides enrichment material which can be used to extend concepts so far introduced.

Multiplying With Mixed Numbers

$$\begin{array}{r} 40\\ \underline{4\frac{1}{2}}\\ 20\\ \underline{160} \end{array}$$

1. The Lanes are planning a vacation trip. Jean is measuring on a map the distances to several places. The scale of the map is 1 inch to 40 miles.

On the map it is $4\frac{1}{2}$ inches from their home to the mountains. To find how many miles this is, multiply 40 by $4\frac{1}{2}$.

First, you multiply 40 by $\frac{1}{2}$. When you multiply 40 by $\frac{1}{2}$, you are really finding $\frac{1}{2}$ of 40. $\frac{1}{2}$ of 40 is ______.

Then you multiply 40 by 4. $4 \times 40 =$ ______.

Last, you add the two partial products. The Lanes live ______ miles from the mountains.

2. $\frac{1}{2} \times 36$ is another way to say $\frac{1}{2}$ of 36. $\frac{1}{2} \times 36 =$ ______

3. $\frac{1}{2} \times 62 =$ ______

4. $\frac{1}{3} \times 30 =$ ______, so $\frac{2}{3} \times 30 =$ ______

5. $\frac{1}{4} \times 48 =$ ______, so $\frac{3}{4} \times 48 =$ ______

6. $\frac{1}{6} \times 54 =$ ______, so $\frac{5}{6} \times 54 =$ ______

7. $\frac{1}{5}$ of $75 =$ ______, so $\frac{2}{5} \times 75 =$ ______

8. $\frac{1}{8}$ of $64 =$ ______, so $\frac{7}{8} \times 64 =$ ______

Multiply.

9. $\begin{array}{r} 16\\ \underline{2\frac{1}{2}} \end{array}$	**10.** $\begin{array}{r} 12\\ \underline{5\frac{3}{4}} \end{array}$	**11.** $\begin{array}{r} 20\\ \underline{3\frac{1}{4}} \end{array}$	**12.** $\begin{array}{r} 60\\ \underline{1\frac{1}{3}} \end{array}$
13. $\begin{array}{r} 36\\ \underline{2\frac{2}{3}} \end{array}$	**14.** $\begin{array}{r} 24\\ \underline{5\frac{1}{8}} \end{array}$	**15.** $\begin{array}{r} 72\\ \underline{3\frac{1}{2}} \end{array}$	**16.** $\begin{array}{r} 40\\ \underline{2\frac{3}{4}} \end{array}$
17. $\begin{array}{r} 48\\ \underline{6\frac{3}{4}} \end{array}$	**18.** $\begin{array}{r} 72\\ \underline{9\frac{1}{8}} \end{array}$	**19.** $\begin{array}{r} 63\\ \underline{3\frac{2}{3}} \end{array}$	**20.** $\begin{array}{r} 80\\ \underline{4\frac{3}{4}} \end{array}$
21. $\begin{array}{r} 56\\ \underline{3\frac{7}{8}} \end{array}$	**22.** $\begin{array}{r} 64\\ \underline{5\frac{1}{4}} \end{array}$	**23.** $\begin{array}{r} 42\\ \underline{3\frac{1}{3}} \end{array}$	**24.** $\begin{array}{r} 60\\ \underline{2\frac{3}{4}} \end{array}$

Multiplying With Mixed Numbers in Problems

When you multiply money numbers by fractions, multiply just as you would any other numbers. Then, in your answer, remember to put in the dollar sign and the point. Where does the point always go?

---

1. To make a meat loaf, Mrs. Lane bought $2\frac{3}{4}$ lb. of chopped meat at 48¢ a pound. How much did she pay for it?

$$\begin{array}{r} \$\ .48 \\ 2\frac{3}{4} \\ \hline \end{array}$$

2. Bob sold a chicken weighing $4\frac{1}{2}$ lb. for 42¢ a pound. How much did he get for the chicken?

3. Sally's mother bought $3\frac{1}{4}$ yards of cloth to make Sally a dress. She paid $1.20 a yard for it. How much did the cloth for the dress cost?

4. If eggs are selling for 56¢ a dozen, how much will Bob get for $2\frac{1}{2}$ dozen eggs?

5. If we average 36 miles an hour on a trip, how many miles should we go in $2\frac{1}{4}$ hours?

6. Jean has a scale map, in which 1 inch = 40 miles. On the map it is $6\frac{1}{4}$ inches from her home to the seashore. How many miles is this?

7. On the map in Problem 6, it is $2\frac{3}{4}$ inches to a lake resort. It is ______ miles from Jean's home to the lake resort.

8. At the store, Sally bought a piece of cheese weighing $2\frac{1}{2}$ lb. At 72¢ a pound, how much did Sally pay for the cheese?

9. It took Tom $1\frac{3}{4}$ hours to cut the grass. His father paid him 40¢ an hour. How much did Tom earn?

10. The week before the recital, Nancy practiced her piano $1\frac{1}{3}$ hours a day for 6 days. How many hours did she practice that week?

11. Sally worked $2\frac{2}{3}$ hours on Saturday taking care of a neighbor's little girl. If she got 30¢ an hour, how much did she earn?

12. Ann bought $2\frac{3}{4}$ yards of ribbon at 40¢ a yard. How much did she have to pay for it?

13. If an airplane flies at an average speed of 224 miles an hour, how many miles will it fly in $4\frac{3}{4}$ hours?

14. Dick was making a shelf a yard long and 6″ wide. His mother asked him to make it $1\frac{1}{2}$ times as long and as wide. How many inches long should Dick make the shelf? ______ How many inches wide? ______

Completing Problems

Complete these problems by writing reasonable numbers in the blanks. Write +, −, ×, or ÷ in front of each problem to show which process you use. Then work the problems and write the answers in the blanks after the problems.

__×__ **1.** How far will we drive in seven hours if we drive _____ miles an hour on an average?

_____

_____ **2.** How many candy bars costing _____ cents each can Jim buy for a quarter? Will he have any money left?

____

_____ **3.** One day, on an automobile trip, the Lanes drove _____ miles in the morning and _____ miles in the afternoon. How many miles did they drive that day?

_____

_____ **4.** Another day the Lanes drove 168 miles in the morning and _____ miles in the afternoon. How much farther did they drive in the morning than in the afternoon?

_____

_____ **5.** From a board 60 in. long, Dick cut off a piece _____ in. long. How long was the piece that was left?

_____

_____ **6.** If oil costs _____ cents a quart, how much will a gallon cost at the same rate?

_____

_____ **7.** Sue made 3 pans of fudge for the candy sale. There were _____ pieces of fudge in each pan. How many pieces of fudge did she make?

_____

_____ **8.** An airplane flew _____ mi. in four hours. How many miles an hour did it average?

_____

_____ **9.** Sally was $55\frac{1}{2}$ in. tall last year. This year she is _____ inches tall. How many inches has she grown during the year?

_____

_____ **10.** Bill paid _____ for a baseball glove and _____ for a bat. Find the total cost.

_____

_____ **11.** Sue bought 5 pounds of sugar at _____ cents a pound. She handed the clerk a dollar bill. How much change did she get?

_____

_____ **12.** Bob sold a chicken weighing $3\frac{1}{2}$ lb. for _____ cents a pound. How much did he get for the chicken?

_____

_____ **13.** Joan weighs _____ lb. Her father weighs _____ lb. How many pounds heavier is he than Joan?

_____

_____ **14.** Mr. Lane can buy a new car for _________. He can sell his old car for _________. If he sells his old car and uses the money for a new car, how much more will the new car be?

_____

Problems With Three Steps

Each problem below has three steps. For each step you must answer a question. Do the work in the boxes and write the answers to the questions in the blanks after the questions.

1. One Saturday afternoon, Mr. Gray took his family to the movies. He bought 2 tickets at 60¢ each and 3 children's tickets at 35¢ each. Find the total cost of the tickets. **a** How much did the 2 tickets cost? ______ **b** How much were the children's tickets? ______ **c** How much did all the tickets cost? ______	*a.*	*b.*	*c.*
2. Sally bought a 5-pound bag of sugar for 9¢ a pound, and crackers for 18¢. She gave the clerk a dollar bill. How much change did the clerk give her? **a** How much did she pay for the sugar? ______ **b** How much were the sugar and crackers? ______ **c** How much change did she get? ______	*a.*	*b.*	*c.*
3. We are taking a 740-mile trip. The first day we drove 189 miles. The second day we drove 306 miles. Find how many hours it will take us to drive the rest of the way if we average 35 miles an hour. **a** How many miles did we drive on the first two days? ______ **b** How many more miles must we drive? ______ **c** How many hours will this take? ______	*a.*	*b.*	*c.*
4. There will be 27 people at our picnic. We want to have 2 sandwiches for each person. We have made 26 ham sandwiches and 19 peanut butter sandwiches. Find how many more sandwiches we must make. **a** How many sandwiches do we want? ______ **b** How many sandwiches have we made? ______ **c** How many must we still make? ______	*a.*	*b.*	*c.*

Page 148 provides enrichment material which can be used to extend concepts so far introduced.

Working Problems With Several Steps

Some of these problems have two steps. Some of them have three steps. Use the space at the right for your work. Write the answer for each problem in the blank after the problem.

1. Nora bought 2 books for $1.75 each and three 25-cent magazines. How much did she spend in all? ________

2. To make costumes for a school play, a committee bought $15\frac{1}{2}$ yd. of white cloth and $9\frac{1}{2}$ yd. of yellow cloth. The cloth cost 39¢ a yard. How much did the committee pay for all the cloth? ________

3. Bob sold 3 dozen eggs at 58¢ a dozen and a $5\frac{1}{2}$-pound chicken for 44¢ a pound. How much more did he get for the chicken than for the eggs? ________

4. Ann wants to buy a sweater that costs $2.48. She had $2, but she spent 25 cents of this for a colored handkerchief. How much more money does she need to buy the sweater? ________

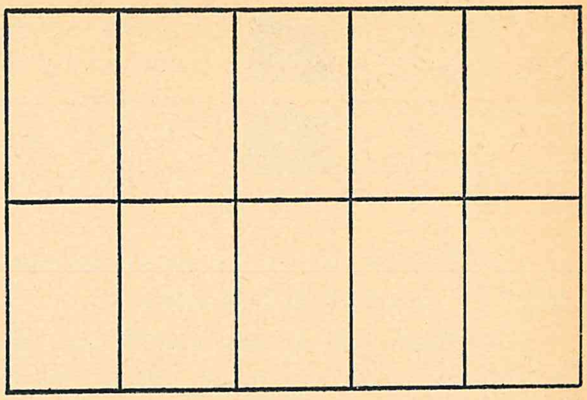
5. Sally went to the store and bought $\frac{3}{4}$ lb. of meat at 80¢ a pound and a loaf of bread for 18¢. How much change should she get from a dollar? ________

6. Bill's baseball team won two games by scores of 8 to 3 and 16 to 9. How many more runs did Bill's team score than the other teams did? ________

7. Jim worked $2\frac{3}{4}$ hours Saturday morning and $1\frac{3}{4}$ hours Saturday afternoon. He was paid 40¢ an hour. How much did he earn on Saturday? ________

8. One morning Jim worked from 9:00 to 11:30. If his father paid him 40¢ an hour, how much did he earn? ________

Two Ways of Adding Tenths



1. This year, Jill and her two sisters each have their own flower garden. Jill's father divided a piece of ground into 10 equal parts, as the picture shows.

Each part is $\frac{1}{10}$ of the whole garden. Another way to write $\frac{1}{10}$ is .1, or 1 with a point in front of it. The point is called a **decimal point;** "decimal" comes from a word meaning ten.

A number written after a **decimal point** is called a **decimal fraction.**

Jill likes gardening the best of the three. Jill got 5 of the pieces. Five pieces are $\frac{5}{10}$, or .5, of the garden. Shade Jill's part of the garden gray.

Betty got 3 parts. This is $\frac{3}{10}$, or .3, of the garden. Make Betty's part of the garden black.

Kay likes to garden just a little. She has $\frac{2}{10}$, or .2, of the garden. Leave Kay's part of the garden white.

2. How much of the garden have Betty and Kay together? You may add $\frac{3}{10} + \frac{2}{10}$ or you may add .3 and .2. $.3 + .2 = .5$. The decimal fraction .5 is just a short way of writing $\frac{5}{10}$. Change $\frac{5}{10}$ to lowest terms. $\frac{5}{10} =$ ______. So $.5 = \frac{1}{2}$ too.

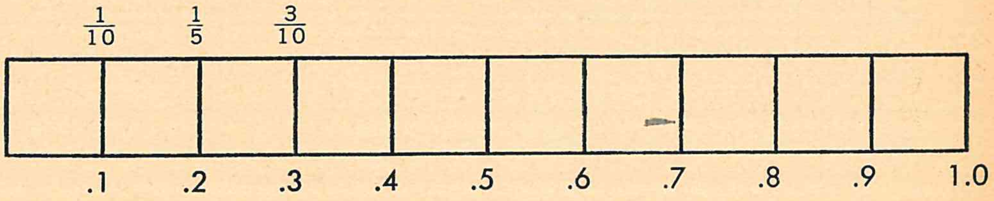
Jill and Betty together have $.5 + .3$, or .8 of the garden. $.8 = \frac{8}{10} =$ ______

Jill and Kay together have $.5 + .2$, or ______ of the garden. Write this decimal fraction as an ordinary fraction in tenths. ______

All three girls have $.5 + .3 + .2 = 10$ tenths, or 1.0, the whole garden.

---

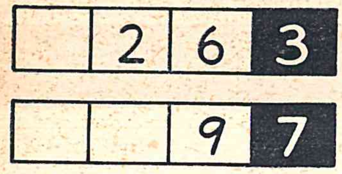
3. This is a picture of a foot divided into tenths instead of inches. The decimal parts of a foot are written below the picture. Finish writing above the picture the common fractions that mean the same as the decimal fractions.



Write each fraction below in the decimal way as tenths, and add.

	a	*b*	*c*	*d*	*e*
4.	$\frac{1}{2} = .5$ $\frac{7}{10} = .7$	$\frac{1}{5}$ $\frac{1}{10}$	$\frac{3}{10}$ $\frac{2}{5}$	$\frac{3}{5}$ $\frac{1}{10}$	$\frac{9}{10}$ $\frac{1}{2}$
5.	$\frac{2}{5}$ $\frac{1}{10}$ $\frac{1}{5}$	$\frac{7}{10}$ $\frac{3}{5}$ $\frac{3}{10}$	$\frac{1}{2}$ $\frac{7}{10}$ $\frac{2}{5}$	$\frac{3}{5}$ $\frac{3}{10}$ $\frac{9}{10}$	$\frac{3}{10}$ $\frac{1}{2}$ $\frac{4}{5}$

Subtracting Decimal Tenths



1. Bill's new bicycle has a speedometer with a mileage meter to show how many miles the bicycle has gone. The lower picture shows the mileage meter when Bill started out to ride to the lake. The top picture shows the meter when he got back. Bill wanted to know how many miles he had ridden to the lake and back.

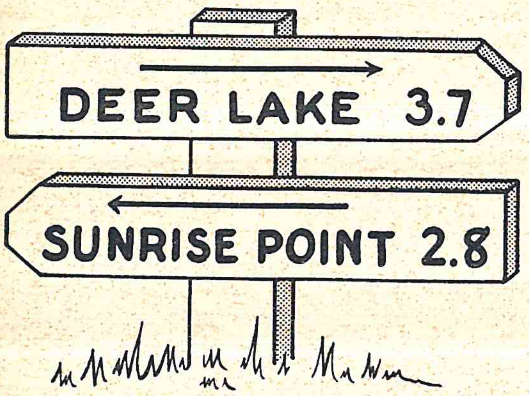
26.3
9.7

On the meter, the figure at the right shows **tenths** of miles. So you must subtract 9.7 miles from 26.3 miles.

Subtract just as you would with whole numbers. In your answer, remember to write the decimal point just under the other decimal points.

Bill rode ______ miles.

2. By one route it is 9.3 miles from Bill's house to the lake. By another route it is only 7.9 miles to the lake. How many miles farther is it to the lake by the first route than by the second? ______



3. Tom and Bill were hiking in a state park. They found a sign saying that Deer Lake was 3.7 mi. ahead, and Sunrise Point was 2.8 mi. in the opposite direction.

How much farther was it to Deer Lake than to Sunrise Point? ______

How many miles was it from Deer Lake to Sunrise Point? (Don't forget the decimal point in your answer.) ______

4. Jean noticed that the speedometer in their car read 9897.6 miles when they started on a trip. It read 10205.2 miles at the end of the trip. How many miles had they gone? ________

Subtract. Check your work by adding.

	a	*b*	*c*	*d*	*e*	*f*
5.	1.2 .9	3.8 2.3	7.4 2.9	9.5 8.7	23.4 6.7	42.9 27.3
6.	11.0 3.7	14.6 8.0	30.1 15.4	92.0 28.3	61.4 50.5	176.3 97.8

Using Decimal Tenths

```
65.7
 9.9
────
```

1. At the right is part of a railroad timetable. It shows the number of miles from Barton City to several stations. To find the distance from Inwood to Bristol, subtract 9.9 mi. from 65.7 mi.

Inwood is ______ mi. from Bristol.

Miles	
.0	Barton City
9.9	Inwood
18.4	Bellville
30.3	Clarksburg
46.9	Merlin
65.7	Bristol
79.2	Adams
91.4	Springtown

2. On the timetable, find the distance from Bellville to Clarksburg.

______

3. Find the distance from Merlin to Springtown. ______

4. Bill rode 9.6 miles on his bicycle one Saturday. The following Saturday he rode 6.4 miles. How many miles did Bill ride on both Saturdays?

______

5. The first month after Bill bought his bicycle, he rode 40.5 miles. The next month he rode 27.8 miles. How many fewer miles did he ride the second month than the first month?

______

6. On the first day of one month last summer, the speedometer on Bill's bicycle read 97.8 miles. On the last day of the month the reading was 205.3 miles. How many miles did Bill ride that month?

______

7. Mr. Lane's car holds 17 gallons of gasoline. When Mr. Lane bought gasoline last time, it took 11.4 gal. to fill the tank. How much gasoline was in the tank before Mr. Lane filled it?

______

8. On a trip, Mr. Lane bought the following amounts of gasoline: 10.5 gal., 8.7 gal., 15.2 gal., 12.8 gal., and 5 gal. How many gallons did he buy altogether?

______

9. When Peggy was ill, the doctor took her temperature. It was 102.3°. A person's usual, or **normal**, temperature is 98.6°. How many degrees above normal was Peggy's temperature?

______

10. A few days later, when Peggy was getting better, her temperature was 96.9°. How many degrees less than normal was this?

______

11. One month Don's father drove his truck 508.8 miles. The next month he drove 476.5 miles. How many miles did he drive in the two months?

______

12. Jim ran a race in 16.7 seconds. The school record for this race is 14.3 seconds. How much slower was Jim's time for the race than the school record?

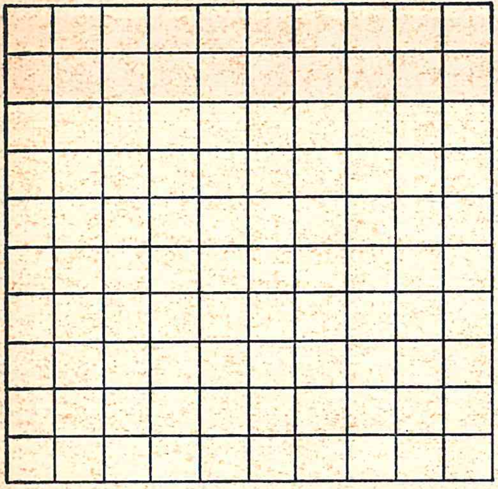
______

13. The four runners on a school relay team ran a relay race. The first runner's time was 15.8 seconds, the second runner's 15.2 seconds, the third 15.5 seconds, and the fourth 14.0 seconds. How many seconds did it take the team to run the race?

______

Have you written the decimal point in each answer? Are your answers reasonable?

Adding Decimal Hundredths



1. The drawing at the left is a square made up of 100 little squares. Each little square is $\frac{1}{100}$ of the large square.

$\frac{1}{100}$ may be written .01 as a **decimal.** Three of the little squares are 3 hundredths, or .03, of the big square. Twelve little squares are .12 of the big square.

Think of the large square as one dollar. Then each small square stands for $\frac{1}{100}$ of a dollar, or $ .01.

Color 10 little squares to show $ .10 (ten hundredths, or one tenth of a dollar). Color 5 little squares another color to show $ .05; 25 squares to show $ .25; and 13 squares to show $ .13.

How many little squares have you colored in all? ______

$ .10 + $ .05 + $ .25 + $ .13 = $______

2. How many of the little squares does it take to make $\frac{1}{2}$ of the large square? $\frac{1}{2}$ of 100 = ______.

Then .50 = $\frac{1}{2}$. One fourth of the large square is how many hundredths? ______

Write these fractions as decimal hundredths: $\frac{3}{4}$ = ______ $\frac{7}{100}$ = ______ $\frac{15}{100}$ = ______

3. When you are writing **decimal tenths,** how many figures come after the decimal point? ______

When you are writing **decimal hundredths,** how many figures come after the decimal point? ______

2.35
2.77
5.51

4. Tom's class is studying the weather. They learned that rainfall is measured in inches and hundredths of inches. One inch of rainfall means that the rain would cover the ground 1 inch deep if it didn't run off or soak in.

Tom called the Weather Bureau and learned that in February, 2.35 inches of rain had fallen in his town. In March, 2.77 inches of rain fell; in April, 5.51 inches fell. How much rain fell in all three months?

To find out, add as you would add any other numbers. When you finish, remember to put the decimal point in your answer, just below the decimal points in the example. ______ inches of rain fell.

5. In May, 4.86 inches of rain fell. In June, 3.20 inches fell. In July, 2.72 inches fell. In August, the rainfall was 8.77 inches. How much rain fell during these four months? (When you write these numbers to add, be sure the decimal points are in a column.)

______

Add these decimals.

	a	*b*	*c*	*d*	*e*	*f*
6.	.35 .08	.06 .07	.54 .29	.75 .50	1.02 .78	6.55 3.49
7.	.05 .14 .60	.47 .38 .25	2.09 3.84 .65	7.15 6.60 4.75	1.26 .08 3.67	12.05 21.79 16.80

Subtracting Decimal Hundredths

1. Every year, a big automobile race is held in Indianapolis. In 1911, the first year the race was held, the winner averaged 74.59 miles per hour. Nearly 40 years later, the average speed of the winner was 124.00 miles per hour. How many miles per hour faster was this than the speed in 1911?

To find out, subtract 74.59 from 124.00. Subtract these numbers just as you subtract any other numbers. Be sure to write the decimal point in your answer, just underneath the decimal points in the example.

In 40 years, the speed of the winner increased by ________ miles per hour.

124.00
74.59

2. In the 1950 Indianapolis race, the first five men to come in made the following average speeds per hour: 124.00, 121.76, 121.78, 122.88, 121.77. Arrange these speeds in the order of their value, the largest first.

__________, __________, __________, __________, __________

How many miles per hour difference is there between the greatest and the smallest of these speeds? ________

3. In Mobile, Alabama, the average annual rainfall is 61.79 inches. In Phoenix, Arizona, the average annual rainfall is only 7.81 in. How many more inches of rain fall in Mobile than in Phoenix each year, on the average?

____

Subtract. Check your answers.

	a	*b*	*c*	*d*	*e*	*f*
4.	.35 .20	.60 .45	.79 .52	1.38 .27	8.02 6.35	9.07 8.50
5.	6.50 1.75	8.25 4.50	10.86 7.49	13.40 5.03	14.25 9.25	20.01 15.07

Matching Common Fractions and Decimals

In each set below, match the decimals in one column with the common fractions in the other column by writing the correct letters in the ( ).

Set I

1.	(*c*)	.4	*a*	$\frac{1}{5}$
2.	( )	.5	*b*	$\frac{3}{5}$
3.	( )	.8	*c*	$\frac{2}{5}$
4.	( )	.6	*d*	$\frac{4}{5}$
5.	( )	.2	*e*	$\frac{1}{2}$

Set II

1.	( )	.75	*a*	$\frac{1}{4}$
2.	( )	.09	*b*	$\frac{3}{100}$
3.	( )	.25	*c*	$\frac{9}{100}$
4.	( )	.90	*d*	$\frac{3}{4}$
5.	( )	.03	*e*	$\frac{9}{10}$

Pages 149 and 150 provide enrichment material which can be used to extend concepts so far introduced.

Practice in Addition

This page will show you how much you have learned about adding different kinds of numbers.

Add these whole numbers. Check your answers.

	a	*b*	*c*	*d*	*e*
1.	3 8 6 1 9 4	18 97 69 54 47 74	206 985 367 534 225	63 878 3706 992 787	1412 706 89 3161 4552

Add these money numbers. Do your answers check?

2.	$ .06 .37 .54 .70 .09	$2.97 .64 1.02 .89 3.35	$ 3.03 76.83 39.87 .70 61.52	$ 6.34 .57 126.09 34.10 7.75	$ 65.00 7.68 89.97 245.52 160.79

Add these fractions and mixed numbers. Be sure to check your work.

	a	*b*	*c*	*d*
3.	$\frac{9}{10}$ $\frac{1}{5}$ $\frac{3}{10}$	$\frac{3}{8}$ $\frac{3}{4}$ $\frac{1}{2}$	$6\frac{1}{2}$ $3\frac{7}{8}$ $\frac{5}{8}$	$14\frac{1}{4}$ $7\frac{11}{12}$ $20\frac{7}{12}$
4.	$4\frac{1}{2}$ $8\frac{1}{2}$ $9\frac{1}{4}$	$8\frac{5}{16}$ $7\frac{3}{4}$ $3\frac{5}{8}$	$13\frac{1}{6}$ $28\frac{2}{3}$ $14\frac{1}{2}$	42 $11\frac{9}{10}$ $89\frac{4}{5}$

Add and check these decimals.

	a	*b*	*c*	*d*	*e*
5.	.9 .5 .3 .8	1.3 .8 2.0 4.6	10.5 6.4 3.9 18.3	3.45 2.75 4.00 6.13	18.20 13.77 54.49 21.99

Copy, work, and check.

6. 3.48 + 8.72 + 2.06

7. $3.55 + .78 + $9

8. 10846 + 49 + 3621

9. 85.6 + 56.9 + 22.7 + .8

6.	**7.**	**8.**	**9.**

Practice in Subtraction

Do these examples to find out how much you know about subtraction. Check each answer by adding.

Subtract these whole numbers and check your answers.

	a	*b*	*c*	*d*	*e*
1.	85 38	56 47	60 14	113 49	180 81
2.	319 185	808 525	609 541	223 80	126 59
3.	834 279	723 227	404 225	8122 3945	2641 858

Subtract these money numbers. Do your answers check?

4.	$1.50 .97	$13.02 7.84	$10.00 6.25	$30.33 9.69	$54.10 18.18
5.	$3.57 2.98	$122.20 97.49	$387.46 189.87	$1246.01 1006.25	$1890.08 943.25

Subtract these fractions and mixed numbers. Check your answers.

	a	*b*	*c*	*d*
6.	$\frac{4}{5}$ $\frac{3}{10}$	$2\frac{1}{4}$ $1\frac{5}{8}$	$6\frac{3}{4}$ $2\frac{1}{2}$	$7\frac{1}{2}$ $3\frac{11}{12}$
7.	$3\frac{5}{8}$ $2\frac{7}{8}$	$21\frac{7}{16}$ $13\frac{7}{8}$	$32\frac{2}{3}$ $31\frac{5}{6}$	$50\frac{1}{5}$ $48\frac{3}{10}$

Subtract these decimals and check your answers.

	a	*b*	*c*	*d*	*e*
8.	.9 .4	1.6 .9	6.0 1.4	12.1 8.3	20.53 7.68

Using a Price List

Here are some things on a printed price list which Sally saw in a store. Use these prices in working the problems on this page.

Apples	2 lb. 15¢	Orange juice (frozen)	3 cans 73¢
Bread	2 loaves 23¢	Peaches (frozen)	3 pkg. 59¢
Buns	6 for 19¢	Soap	6 bars 55¢
Corn	4 cans 73¢	Spiced ham	$\frac{1}{4}$ lb. 27¢
Grapefruit	3 for 20¢	Tomato juice	4 cans 77¢

1. Two pounds of apples cost 15 cents. Then 1 pound will cost 15 ÷ 2, or $7\frac{1}{2}$ cents. But, if Sally buys only one pound of apples, she will have to pay 8 cents.

$$\begin{array}{r} 7\frac{1}{2} \\ 2\overline{)\,15\phantom{\frac{1}{2}}} \\ \underline{14}\phantom{\frac{1}{2}} \\ 1\phantom{\frac{1}{2}} \end{array}$$

How much will Sally have to pay for 1 loaf of bread?

______

2. How much will Sally have to pay for 1 grapefruit?

______

Find how much Sally must pay for:

3. One package of frozen peaches.

______

4. One can of corn. ______

5. One can of frozen orange juice.

______

6. One bar of soap. ______

7. One fourth of a pound of spiced ham costs 27¢. At this rate, a whole pound (4 fourths) will cost ______.

8. Sally wants to buy 6 grapefruit. Six grapefruit are 2 times as many as 3, so Sally must pay 2 × 20¢, or ______¢.

9. How much would a dozen buns cost?

______

10. How much would Sally have to pay for 1 can of tomato juice?

______

At this rate, what would 4 cans of tomato juice cost?

______

How much can Sally save by buying 4 cans at the price given in the list above?

______

11. At the price shown in the list, how much would a dozen cans of corn cost?

______

12. How much money will Sally save by buying 6 bars of soap at one time instead of buying 1 bar at a time?

______

13. Mrs. Lane wants to buy 15 packages of frozen peaches for a church supper. How much will she have to pay?

______

14. Sally buys 2 pounds of apples, 1 loaf of bread, 1 package of frozen peaches, 3 grapefruit, and a can of corn. Find her total bill.

______

Practice in Multiplication

Work these examples to see how much you have learned about multiplication. Make sure your work is correct, either by going over it or multiplying again on another paper.

Can you multiply by one-figure numbers?

	a	*b*	*c*	*d*	*e*
1.	18 4	37 2	96 5	524 7	309 6
2.	850 4	2618 6	4708 8	2950 4	1006 9

Can you multiply by two-figure numbers?

3.	96 34	79 27	67 19	149 35	607 59

Can you multiply by three-figure numbers?

4.	572 128	704 137	850 246	590 295	1283 378

Can you multiply money numbers?

5.	$ .69 8	$5.17 9	$4.38 48	$3.80 75	$1.75 50
6.	$ .37 20	$8.89 3 00	$9.40 3 07	$6.05 4 09	$4.95 2 60

Practice in Division

See how much you have learned about division. Divide, and check by multiplying.

Divide these whole numbers.

	a	*b*	*c*	*d*	*e*
1.	$7\overline{)98}$	$4\overline{)340}$	$6\overline{)282}$	$5\overline{)1800}$	$9\overline{)751}$
2.	$34\overline{)816}$	$26\overline{)520}$	$30\overline{)2100}$	$16\overline{)768}$	$38\overline{)2622}$

Divide these money numbers.

3.	$6\overline{)\$8.82}$	$5\overline{)\$3.70}$	$85\overline{)\$47.60}$	$55\overline{)\$79.75}$	$19\overline{)\$14.50}$

Writing Fractions in Quotients in Lowest Terms

$$\begin{array}{r} 13\frac{6}{12} = \\ 12\overline{)162} \\ \underline{12} \\ 42 \\ \underline{36} \\ 6 \end{array}$$

1. Bob's hens laid 162 eggs one week. To find how many dozen eggs this is, divide by 12.

There is a final remainder, 6. This may be written as the numerator of a fraction with the divisor (12) as the denominator. (The fraction $\frac{6}{12}$ means that 6 is divided by 12.)

But $\frac{6}{12}$ can be changed to $\frac{1}{2}$. $13\frac{6}{12}$ = ______. Bob had ______ dozen eggs.

Divide. Change fractions in the quotients to lowest terms.

2. $8\overline{)390}$ **3.** $4\overline{)374}$ **4.** $6\overline{)472}$ **5.** $8\overline{)562}$

6. $\frac{1}{4}$ of 34 = $8\frac{1}{2}$ $\frac{1}{8}$ of 60 = ______ $\frac{1}{6}$ of 58 = ______ $\frac{1}{9}$ of 84 = ______

Problems Using Three Processes

There are 3 steps to each of the problems on this page. You will need to use 3 processes to solve them. Do your work in the boxes. After each problem, circle the processes you used (+, −, ×, or ÷), and write your answer in the blank.

1. One week Bob gathered 150 eggs. He sold them for 54¢ a dozen. He also sold some chickens for $3.60. How much money did Bob make that week from his chickens and his eggs?

+ − × ÷ Answer ________

2. Jean got $3.00 for an Easter present. She spent $1.29 for a new paint brush and 20 cents a tube for 6 tubes of paint. How much of her money did she have left?

+ − × ÷ Answer ________

3. When Bill started on a bicycle trip one day, his speedometer said 56.7 miles. Three hours later, the speedometer said 80.7 miles. At that rate, how far could Bill go in $4\frac{1}{2}$ hours?

+ − × ÷ Answer ________

4. Twenty boys and girls in Sue's class are going on a picnic. They are to have 3 sandwiches apiece. If Sue and Jill have already made 15 peanut butter sandwiches and 8 cheese sandwiches, how many more sandwiches must they make?

+ − × ÷ Answer ________

5. Sally wants to buy three yards of material at 79¢ a yard, a pattern for 25¢, some thread for 8¢, and some buttons for 29¢. How much change will she get from a five-dollar bill?

+ − × ÷ Answer ________

6. Allen says that this spring he bought 4 rolls of film for his camera, at 50¢ a roll. It cost him $2.76 to get his films developed and printed, and 28 of the pictures turned out to be good. How much did each good picture cost Allen?

+ − × ÷ Answer ________

Page 151 provides enrichment material which can be used to extend concepts so far introduced.

Vacation Problems

The problems on this page show you some of the ways you may be using arithmetic during your vacation this summer. Be sure your answers are sensible.

1. Bill and Tom went hiking with Bill's father. They climbed $2\frac{1}{2}$ miles on a trail up a mountain. A sign there said, "$\frac{7}{8}$ mile to the top." When they reached the top, how many miles had they climbed?

2. It took them $3\frac{1}{4}$ hours to climb the mountain and $1\frac{3}{4}$ hours to come down. How much longer did it take them to climb than to come down?

3. Sam went fishing one day. The largest fish he caught was $14\frac{1}{2}$ inches long. The smallest was $7\frac{3}{4}$ inches long. Find the difference in length.

4. Bob went fishing with Sam. Bob caught two fish, one weighing $1\frac{1}{2}$ pounds and the other $\frac{7}{8}$ pound. Sam caught one fish weighing $2\frac{5}{8}$ pounds. How much more did Sam's fish weigh than both of Bob's together?

5. Some Boy Scouts took a three-day hike in the mountains. From the map, the boys found that they had walked 10.8 miles the first day, 7.5 miles the second day, and 8.7 miles the third day. How many miles did they go?

6. Our car will go about 18 miles on a gallon of gasoline. About how many gallons of gasoline will we use to make a trip of 1548 miles?

7. At a filling station we bought 10 gallons of gasoline costing 26 cents a gallon and 2 quarts of oil at 35 cents a quart. How much did we spend in all?

8. The Lanes had 17 gallons of gasoline in their car when they started on a trip. They drove 247 miles and had 4 gallons left. How many miles had they gone per gallon of gasoline?

9. On the first day of a 476-mile vacation trip we drove 196 miles. If we average 35 miles an hour, how many hours will it take us to finish the trip?

10. Bill planned to take a three-day bicycle trip with some of his friends. They thought they would ride 7 hours each day. If they averaged 9 miles an hour, how many miles would they go in the 3 days?

11. Peggy rented her bicycle to her friends for 10¢ a ride or 35¢ an hour. One day she rented it to Sally for 3 hours and to other girls for 7 rides. How much did Peggy earn with her bicycle that day?

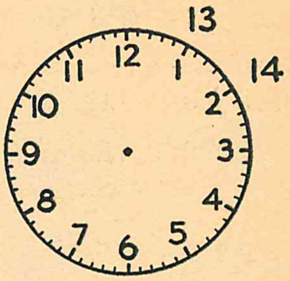
12. Sue and her mother canned 29 jars of tomatoes, 18 jars of corn, and 31 jars of string beans. Sue put the jars on 3 shelves, with the same number on each shelf. How many jars were on each shelf?

Page 152 provides enrichment material which can be used to extend concepts so far introduced.

Test pages 7 and 8 are to be given following completion of this page.

Thirteen O'Clock

Did you know there really **is** a thirteen o'clock? In many European countries, the railroads run on a 24-hour day. The hours in the afternoon are not called "one," "two," "three," and so on. Instead, after 12 o'clock noon there comes 13 o'clock, 14 o'clock, and so on up to 24 o'clock.



What time in the afternoon is 13 o'clock? ________ p.m.

This system is used because it is sensible. If a train leaves at 3 o'clock by our time system, we have to find out whether it is 3 a.m. or 3 p.m. But in a European country, 3 o'clock is always during the night. In a train schedule, three o'clock in the afternoon would be printed as ________ o'clock instead.

In the clock above, write the numbers up to 24 outside the other numbers. Then see if you can do the problems below. Pretend that this country is now using a 24-hour clock.

1. If Bill goes to bed at 21 o'clock and gets up at 7 o'clock, how many hours of sleep does he get?

____

2. We are going to have dinner at half-past 17 o'clock. Our favorite television program starts at 19 o'clock. How much later is this?

____

3. It is exactly a 7-hour train trip from Chicago to Bill's city. If Bill's uncle leaves Chicago at 14:10, when should he arrive in Bill's city?

____

4. We go to school at 9 o'clock and get out at half-past 15 o'clock. If we have an hour for lunch at the school cafeteria, how many hours do we spend studying?

____

5. A train started from New York City at 5 o'clock and got to Cleveland 12 and a half hours later. What time was it then?

____

6. A football game started at 14 o'clock and ended 2 and three quarters of an hour later. Can you write the time the game was over?

____

7. Fill the blanks in this story. Be sure to write your answers in 24-hour time.

Radio Operator X glanced nervously at his watch. It was 24:05. The pilot on Flight 84 should have reported an hour and two minutes ago.

(When would this have been? ________)

Suddenly a faint radio signal came in. ". . . crashed at 23:02 on the north side of Bald Mountain," a voice said. "One man badly hurt. Must have help in an hour . . ."

Operator X looked at the time. It was exactly 24:25. (How long had the plane been down?

________________ When did help have to get there? ________)

Frantically he sent out messages. In six minutes, a helicopter with a doctor was on the way. Fifty-two minutes after that, the helicopter radioed it had landed safely.

When did the helicopter start? ________

When did it get there? ________

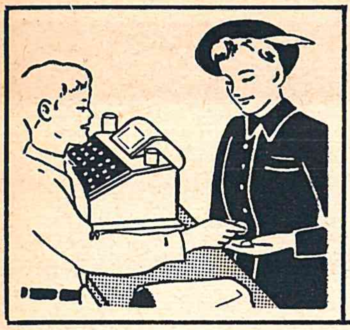
Did it get there in time? ________

8. If you don't have a clock face handy, how could you tell what time 4 o'clock in the afternoon is on a 24-hour clock?

Add ________ to ________.

This page of enrichment material is to be used following page 7.

Grocery Store Arithmetic



Dan's father owns a grocery store. Dan likes to help in the store on Saturdays, sometimes, waiting on customers and making change. When he makes change he has to be very careful, of course, to count the money out right and give the customer the correct amount.

If you were Dan, could you do the following problems?

1. Mrs. Clark bought a can of corn for 21 cents, a loaf of bread for 17 cents, and some meat for 93 cents. How much should Dan charge her? ________

2. Mrs. Clark gave Dan a dollar and fifty cents. How much money should she get back? ________

3. Dan gave Mrs. Clark 6 pieces of money. Four were ____________, one was a ____________, and one was a ____________.

4. Sally came in with a shopping list for her mother. Sally wanted: 1 dozen oranges for 49¢; a can of soup for 19¢; a box of crackers for 27¢; a head of lettuce for 22¢; 2 pounds of sugar for 19¢; and a can of fruit for 35¢. What was Sally's bill? ________

5. Sally gave Dan two dollar bills. List the change he should give her:

____

____

How much change? ________

6. Mrs. Parker bought a roast for $2.73, some tomatoes for 39¢, some frozen peas for 22¢; a dozen eggs for 69¢; and two pounds of coffee for $1.47. How much did Mrs. Parker spend that day? ________

7. Mrs. Parker gave Dan a $10 bill. What is the fewest possible number of pieces of money he could give her in change? ________

List them: ________________

____

8. A man bought some canned goods for $1.62 and gave Dan a five-dollar bill. Dan started to give the man back three pennies, a dime, a quarter, and four dollar bills. How much change would this have been? ________

What was the right change? ________

9. A girl bought some cake mix for 27¢ and gave Dan a dollar. Dan gave her 3 pennies, 4 dimes, a nickel, and a quarter. Dan's father said, "You could have given her only 6 pieces of money, Dan." List them.

____

____

____

This page of enrichment material is to be used following page 9.

Writing Your Own Questions

Complete each problem by writing a question. Your question will make it either an addition or a subtraction problem. Then solve the problem and write your answer in the blank.

1. Last week Tom earned $1.25. This week he earned $1.70. __________

____

______________________________? __________

2. Ann had 200 picture post cards in her collection. Last week she sent 27 of them to a "pen pal" in Canada. ______________________

______________________________? __________

3. Mary bought a sweater that cost $3.39. She gave the clerk three dollars and two quarters. ______________________________

______________________________? __________

4. Ted's big brother raises tropical fish. One day he sold some angel fish for $3.85 and some guppies for $1.93. ______________________

______________________________? __________

5. The first game Bill bowled he made 54 points. The second game he made 73 points. ______________________________

______________________________? __________

6. Our family car had gone 24,538 miles. This summer we took a trip of 2917 miles. ______________________________

______________________________? __________

7. Last year Allen took 72 pictures with his camera. This year he has already taken 120 pictures. ______________________________

______________________________? __________

This page of enrichment material is to be used following page 10.

At the Post Office

Jerry is treasurer of his stamp club. Every once in a while Jerry goes to the post office to buy new issues of stamps for the members of his club. Since he is spending the club's money, he has to keep careful track of it.

See if you can do the arithmetic Jerry has to do. Perhaps you can work some of these problems as quickies.

1. On one trip, Jerry bought 45 new 6-cent air-mail stamps. How much did he pay for them?

2. He gave the clerk a 5-dollar bill. List the change he should get.

3. There are 9 boys in the club. How many air-mail stamps will each boy get (Problem 1)?

4. Another time, a new 3-cent stamp came out. Three boys wanted 5 stamps each, 2 boys wanted 8 stamps each, and 4 boys wanted 10 stamps each. How many stamps did Jerry ask for?

5. Once, Jerry bought 27 7-cent stamps and 18 9-cent stamps. How much did these stamps cost?

6. When he bought these stamps, he had $4.00 with him. How much change did he get?

List his change:

7. Jerry saw a man mail five packages. Three, just alike, cost 27 cents each to send. One cost 54¢, and a big one cost $1.24. How much did it cost to send all five?

8. It costs 3 cents an ounce (or part of an ounce) to send a regular letter. Special delivery costs 15 cents extra. How much will it cost Jerry's mother to send a 3-ounce letter by special delivery?

9. Insuring a package against being lost costs the following amounts:

not over $5	5¢
from $ 5.01 to $10	10¢
from $10.01 to $25	15¢
from $25.01 to $50	20¢

Jerry's mother wants to insure a package for $25. The postage on the package is 46¢. How much must she pay in all?

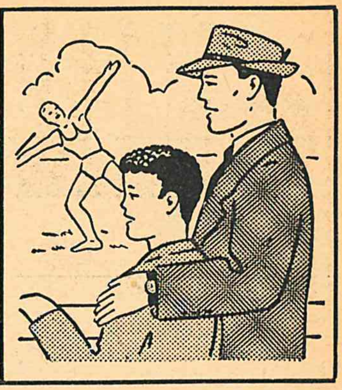
10. Jerry's mother is secretary of a women's club. Once she asked Jerry to get her these things at the post office:

150	3-cent stamps
250	1-cent postcards
20	6-cent air-mail stamps
5	15-cent special delivery stamps

How much did these all cost?

This page of enrichment material is to be used following page 14.

Bill Sees a Track Meet



When Bill's father went to college, he used to be a runner on his college track team. Last spring, he took Bill back to his college to see a track meet.

First came the **track** events—the running races and relays, and the hurdle races. Then came the **field** events—the high jump, the broad jump, the pole vault, and the javelin and discus throws.

Bill was glad he had studied measures in school. Knowing about these things made the track meet more interesting to him.

You may be able to work some of Bill's problems as quickies.

1. The man who won the 100-yard dash ran it in 10 seconds. How many **feet** a second was this?

____

2. The man who won the 440-yard race ran it in 49 seconds. How much less than a minute was this?

____

3. The 880-yard race was run in 2 minutes. At this rate, how long would it have taken the runner to run a mile?

____

4. The 220-yard hurdle race was run in 25 seconds. The 440-yard hurdle race took 58 seconds. The second race took how many seconds longer than twice as long to run as the first?

____

5. In a relay race, 4 men ran a total of $\frac{1}{2}$ mile. How many **yards** did each man have to run?

____

6. The total time for this relay race was one minute and 40 seconds. How many seconds was this?

____

About how many seconds per man?

____

7. The winning time in the 2-mile run was 10 minutes. The runner went how many times as fast as a man walking a mile in 15 minutes?

____

8. The winning high jump was 6 ft. The best running broad jump was 24 ft. The broad jump was how many times as far as the high jump?

____

9. The best pole vault was 13 feet and 5 inches. How much over 4 yards was this?

____

10. The discus throw was 168 ft. The javelin throw was 225 ft. How many **yards** farther was the javelin throw than the discus throw?

____

11. One of the field events at a track meet is throwing a heavy hammer. The winning hammer throw Bill saw was 167 ft. Bill's father said that when he was in college, a man threw the hammer 179 feet. How many yards farther was this than the hammer throw Bill saw?

____

This page of enrichment material is to be used following page 17.

Multiplication or Division?

Some of the problem situations below are multiplication situations. Some of them call for division. See if you can write the right question for each problem. Then put the answers in the blanks. Underline the process you used.

---

1. Ann wanted to buy 4 little silk scarves for presents. Each scarf cost 39¢.

____?

Multiply **Divide** Answer __________

2. Jerry's stamp club recently got a packet of 189 French stamps. There are 9 boys in the club. ________________________________

____?

Multiply **Divide** Answer __________

3. The whole packet of French stamps for Jerry's club cost $7.56. __________

____?

Multiply **Divide** Answer __________

4. Dick wanted to cut 6 short pieces of board each 18 inches long. ________

____?

Multiply **Divide** Answer __________

5. Last summer, Tom cut Mrs. Gay's lawn for her. He cut it 8 times, and earned $1.45 each time. ________________________________

____?

Multiply **Divide** Answer __________

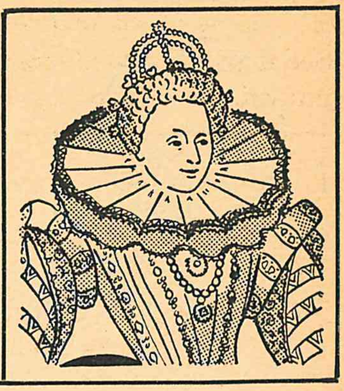
6. The 7 boys in Bill's club want to earn money to buy a radio for their clubroom. They can get a small radio for $15.54. ____________________

____?

Multiply **Divide** Answer __________

This page of enrichment material is to be used following page 19.

Long Tons and Short Tons



The ton generally used in this country is 2000 pounds. It is sometimes called a **short ton.**

There is also a **long ton** which is used in England and in shipping freight to other countries. The long ton was started hundreds of years ago by an English queen, Elizabeth. She decided that a **hundredweight,** or 100 pounds, should be 112 pounds instead. Since a ton is 20 hundredweight, a long ton is 20 × 112 or 2,240 pounds.

A funny word that shippers use is **kip.** A kip is half a short ton, or 1,000 pounds.

1. Tom was talking to a man at the zoo. The man said their biggest elephant weighed 5 tons. Some kinds of whales weigh 70 tons. A 70-ton whale would be how many times as heavy as the zoo's biggest elephant?

____

2. The man told Tom that the rhinoceros in the zoo weighed 6,000 lb. The hippopotamus weighed 8,000 lb. How many tons heavier was the hippopotamus?

____

3. Don and his father were riding in their truck. The truck weighed 4,000 lb., and there were 1500 lb. of apples on it. Don and his father together weigh about 200 lb. How many pounds did the truck, the apples, and Don and his father weigh?

____

4. They came to a bridge saying "Load limit 3 tons." How many pounds lighter was the truck and its load than the limit?

____

5. Mr. Lane's new car weighs 3280 lb. Mr. Lane weighs 158 lb., Mrs. Lane 130 lb., Tony 115 lb., and Jean 98 lb. How much less than 2 tons do the Lanes and their car weigh?

____

6. How many short tons of tea would 5 long tons make? (Use subtraction if you don't know how to divide by 2000.)

____

How many pounds would be left over?

____

7. How many pounds less than half a long ton is a kip?

____

8. Can you fill in the blanks in the following story?

An American merchant sent 7 short tons, a kip, and a hundredweight of sugar to a merchant in England. (How many pounds was this? ________)

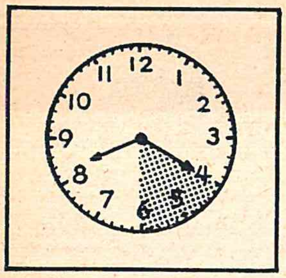
The English merchant had not understood that the shipment was to be in American weights. He expected to get 7 long tons of sugar, a kip, and a British hundredweight of 112 pounds.

(How many pounds of sugar did the Englishman expect to get? ________ How many pounds short of this was the shipment? ________)

When the American merchant understood the trouble, he said he would send another kip and 7 hundredweight (100 pounds) of sugar to the Englishman. (How many pounds did he send? ________. How many extra pounds did the English merchant get? ________)

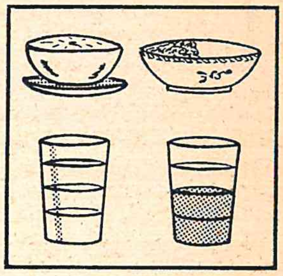
This page of enrichment material is to be used following page 21.

Tom Meets Some Fractions

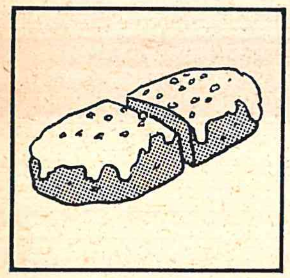


Can you fill in the blanks in this story?

1. Tom's alarm clock didn't go off. Finally his mother waked him and said, "Tom, you have just 10 minutes to get ready for breakfast." What part of an hour was this? ______



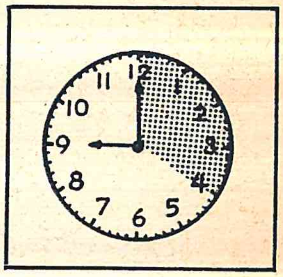
2. For breakfast, Tom ate ______ of a grapefruit and ______ of his cereal. He ate an egg and drank ______ glasses of milk. He took his sweet roll to school with him, wrapped in a paper napkin.



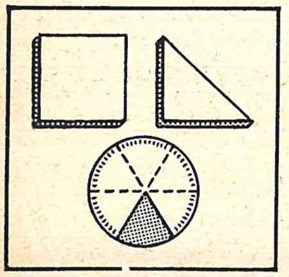
3. In Tom's city, 8 blocks make a mile. Tom walked 1 block to Jim's house. This was ______ mile. Jim and Tom walked another block to school. This was ______ mile. In all, Tom walked ______ mile to school.

4. Tom shared his sweet roll with Jim. Each boy had ______ of the roll.

5. Tom got to school on time. The assembly program lasted 20 minutes, or ______ of an hour. Social studies lasted 45 minutes, or ______ of an hour.



6. In social studies, 5 pupils wanted to use a special reference book. If they divided the 45 minutes equally, each one could keep the book ______ of the time, or ______ minutes.



7. For lunch, Tom had ______ sandwiches. He had some tomatoes and soup. He had ______ of a pie.

8. Ann brought 5 cookies to school. In the afternoon, she shared them with Jean and Tom. Tom got ______ cookies.

9. After school, Tom went 3 blocks to Bill's house. This was ______ of a mile (see Problem 3). Then he went 3 more blocks to his own house. Tom walked ______ of a mile home from school.

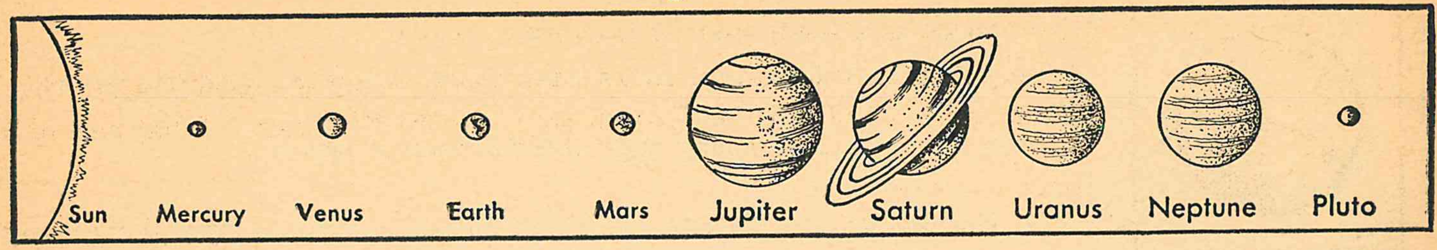
10. After dinner that night, Tom and his father looked at a catalogue. They saw a control switch for Tom's electric train for $7.98. Tom's father said, "If you earn the rest, Tom, I'll give you $\frac{1}{2}$ of the cost of the switch." Tom's father was offering to pay $________.

$2\overline{)\$7.98}$

11. Before he went to bed, Tom counted the money in his bank. He found he had $\frac{1}{3}$ of the $3.99 that he would need to buy the the switch, or $________.

This page of enrichment material is to be used following page 25.

Using Millions



Tom is studying the sun and planets. He learned that **Venus** is about 67 million miles away from the sun. The **earth** is about 93 million miles from the sun. The average distance of **Mars** from the sun is about 141 million miles. **Saturn,** the planet with the rings, is about 886 million miles from the sun.

1. Write each of these distances out in full, with all the zeros.

Venus ______________________ miles from sun

Earth ______________________ miles from sun

Mars ______________________ miles from sun

Saturn ______________________ miles from sun

An easy way to multiply or divide with millions like these is to forget about the six zeros in each number and just work with the number of *millions.*

2. Which planet is a little more than 9 times as far away from the sun as the earth?

____

3. Mars is how much less than twice the earth's distance from the sun?

____

4. When Pluto, the farthest planet, is the farthest away from the sun it can get, it is 4,300,000,000 miles from the sun. How many million miles is this?

____

5. When Pluto is the nearest it ever gets to the sun, it is still 2,750,000,000 miles away. What is the difference between Pluto's farthest and nearest distances from the sun?

____

6. If a rocket traveled at the speed of light, it would go about 16,070,000,000 miles in 24 hours. How many million miles is this?

____

7. When the earth and Mars are on the same side of the sun and in line with it, about how many million miles is the earth from Mars?

____

If we had a rocket ship that could go a million miles an hour, about how many hours would it take us to go from the earth to Mars?

____

8. If Venus were on the same side of the sun as we are and in line with us, how long would it take us to go to Venus in a million-mile-an-hour rocket ship?

____

9. When Jupiter, the largest planet, is nearest the earth, it is only about 367 million miles away. Suppose we are traveling in a "slow" rocket that can go only 5 million miles a day. How long would the trip to Jupiter take?

____

10. At its closest point, the planet Mercury is 50 million miles from us. In a rocket ship traveling 5 million miles a day, how long would a round trip to Mercury take?

____

This page of enrichment material is to be used following page 29.

Which Process Does Bob Use?

1. Bob has a small flock of hens. Recently Mr. Smith, who runs a grocery in a small town near Bob's farm, asked Bob if his hens laid 60 dozen eggs a month. How many eggs would 60 dozen eggs be? ________

2. Bob knows that he averages about 25 eggs a day. In April, how many eggs would he get? ________ How many more than 60 dozen eggs is this? ________

3. Bob agreed to sell most of his eggs to Mr. Smith. One month he sold 54 dozen eggs at an average of 49¢ a dozen. How much money did Bob get for his eggs?

____

4. The next month, Bob sold 63 dozen eggs at an average of 47¢ a dozen. How much did he get that month?

____

How much more than the month before?

____

5. Bob has 32 hens in his flock. He says it costs him about 27¢ a month to feed one hen. How much does it cost him a month to feed his flock?

____

About how much does feed cost Bob a year?

____

6. Bob says that last year he got an average of 25 dozen eggs from each of his hens. He sold the eggs at an average price of 48¢ a dozen. How much money did each hen earn for him?

____

How much money did all 32 hens earn for Bob?

____

7. About how much does it cost Bob to feed one hen for a year? (See Problem 5.)

____

8. Bob also raises chickens to sell. Last year he bought 68 baby chicks at 13¢ a chick. How much did he pay for them?

____

9. Sixty-five of the chicks grew up. Bob sold them at an average of $1.23 apiece. How much did Bob get for them?

____

10. Bob figures that it cost him 79¢ apiece to buy and raise these 65 chickens. How much did they cost in all?

____

How much did Bob make on these chickens, after paying his expenses?

____

11. Bob clears about $25 a month on his egg and chicken business. If he saves half of this, about how much a month does he save?

____

How much does Bob save in a year?

____

12. Bob wants to increase his flock. He is planning to buy 25 special fancy chicks to raise as hens. These fancy chicks cost 29¢ apiece. How much will he pay for them?

____

This page of enrichment material is to be used following page 31.

Some Things To Know About Heat

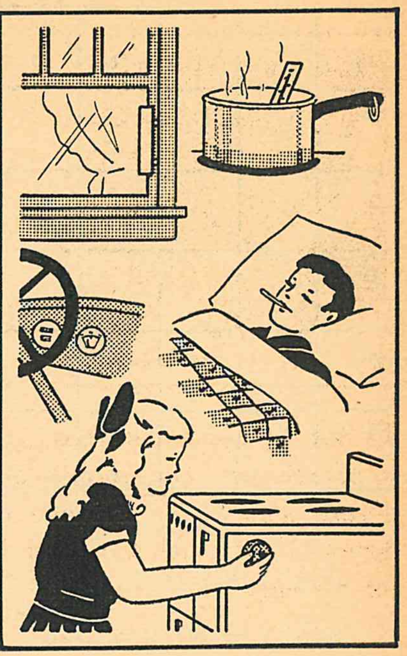
For thousands of years, people could only guess at how hot or cold it was. Then, about 350 years ago, a scientist named Galileo invented the first **thermometer,** an instrument to measure heat.

A hundred years after Galileo, a man named Fahrenheit invented a thermometer so good we are still using it. Fahrenheit found that a metal called **mercury** gets steadily bigger ("expands") the hotter it gets. Mercury gets steadily smaller ("contracts") as it gets colder.

Fahrenheit put mercury in a thin glass tube with a little bulb at the bottom. He put equal parts of snow and salt around the bulb. The point in the tube to which the mercury sank he called **zero.**

Water freezes at 32° on the Fahrenheit scale. Water boils at 212°.

Most of the thermometers we use for everyday tasks are Fahrenheit. See if you know what is having its heat measured, and why, in each of the pictures to the right.



1. Degrees below zero are written with a minus sign (—) in front of them. How many degrees colder is —27° than 27°?

____

2. Probably the coldest thing most people ever see is "dry ice." "Dry ice" is —110° Fahrenheit. How many degrees colder than the freezing point of water is this?

____

3. How much colder than boiling water is "dry ice"?

____

4. How much hotter than boiling water is an oven at 400°?

____

5. Mrs. Gray bakes custard at about 275°F. (Fahrenheit). She bakes biscuits at about 425°F. How much hotter must the oven be for biscuits than for custard?

____

6. How many degrees less than freezing is —18°F.?

____

7. When Don's mother quick-freezes food out of their garden, she does so at a temperature of about 10°F. How many degrees below freezing is this?

____

After she freezes the food, she stores it at 20°F. When she wants to use it, she puts it in their regular refrigerator at about 50°F. How many degrees above freezing is the regular refrigerator?

____

Can you see why Don's mother cannot store frozen food in the regular refrigerator? How much colder is the storage refrigerator than the regular one?

____

8. Bill's father took him to see a steel mill. Bill learned that melted steel is about 3500°F. This is how many times as hot as a hot kitchen oven at 500°F.? (Think: by what number would you multiply 500 to get 3500?)

____

9. Steel can be rolled into bars when it is about 2100°F. This is about how many times as hot as a hot kitchen oven?

____

This page of enrichment material is to be used following page 34.

An Addition Puzzle

This puzzle is a sort of magic square. If you do it right, **a** down is the same as **a** across, **g** down is the same as **b** across, **h** down is the same as **c** across, **i** down is the same as **d** across, **j** down is the same as **e** across, and **k** down is the same as **f** across.

First do the examples marked **across,** and fill them in. The first one is filled in for you.

Then do the examples marked **down,** and see if your numbers check. If you don't get the same numbers, there is a mistake in your work somewhere.

a 1	g 6	h 1	i 3	j 9	k 9
b					
c					
d					
e					
f					

Across

a. 41603 + 82109 + 37687
b. 84321 + 5039 + 526623
c. 65584 + 72996 + 20744
d. 95646 + 189821 + 108135
e. 342651 + 609224 + 30194
f. 17662 + 901784 + 14849

Down

a. 69788 + 1068 + 90543
g. 847 + 388206 + 1427 + 225503
h. 74062 + 70299 + 1065 + 13898
i. 245967 + 132768 + 5420 + 9447
j. 459682 + 510478 + 10026 + 1883
k. 336402 + 448596 + 104658 + 44639

A Multiplication Puzzle

This square is a multiplication puzzle. The letter **a** down is the same as **a** across, **g** down is the same as **b** across, **h** down is the same as **c** across, **i** down is the same as **d** across, **j** down is the same as **e** across, and **k** down is the same as **f** across.

First do the multiplications marked **across,** and fill them in. Then do the multiplications marked **down,** and see if your numbers check. If they don't, find your mistake. It may be in either the **down** or the **across** multiplication.

a	g	h	i	j	k
b					
c					
d					
e					
f					

Across

a. 424 × 382
b. 927 × 743
c. 305 × 612
d. 1047 × 933
e. 828 × 805
f. 8101 × 100

Down

a. 764 × 212
g. 2229 × 309
h. 915 × 204
i. 311 × 3141
j. 207 × 3220
k. 25 × 32404

This page of enrichment material is to be used following page 38.

Camping Out

1. Sam, Don, Bob, and three other boys went on an overnight camping trip at the lake last summer. They stayed at the lake 18 hours. What fractional part of a day was this? Think: 6 hours are $\frac{1}{4}$ of 24 hours, so 18 hours are 3 times 6 hours, or $\frac{\quad}{4}$ of a day.

2. Bob brought $1\frac{1}{2}$ dozen eggs. How many eggs apiece was this?

(Think first: a dozen eggs are ________; a half-dozen are ________; ________ eggs in all.)

3. Sam brought $1\frac{1}{2}$ loaves of sliced bread. The whole loaf had 20 slices in it. How many slices of bread apiece did the boys have? (Think first: 20 + $\frac{1}{2}$ of 20 is how many slices?)

4. Don brought $1\frac{3}{4}$ dozen ears of corn from his garden. How many ears of corn could each boy have?

5. When they got to the lake, Sam and Bob went fishing. They caught 8 small fish. How many fish apiece did the 6 boys have for supper?

6. The boys started to get supper at 6 o'clock. It took them an hour and a quarter to build the fire and cook the food. At what time did they have supper ready to eat?

7. The corn took half an hour to roast. If they started to roast the corn at 6:10, when was it done?

8. The boys had $\frac{3}{4}$ dozen oranges for breakfast. How many oranges apiece was this?

9. The boys slept for $\frac{1}{2}$ of their 18 hours in camp. How many hours did they spend asleep?

They spent 2 hours swimming. Was this $\frac{1}{3}$, $\frac{1}{6}$, or $\frac{1}{9}$ of their total time?

They spent 3 hours cooking and eating. What part of their camping time was this?

10. At the place the boys camped, the lake is $\frac{3}{8}$ of a mile wide. Sam rowed across the lake and back to fish. How far did he row?

11. Don's father took the boys and their bicycles 16 miles in his truck. The boys bicycled the remaining 4 miles to the lake. What part of their trip did the boys do by bicycle?

12. Bob's and Sam's fathers camped near the boys. They spent some of the time fishing. Bob's father's biggest fish weighed 6 more ounces than the biggest fish Sam's father caught. What part of a pound more was this?

This page of enrichment material is to be used following page 42.

Completing Two-Step Problems

Each problem situation below gives you enough information to make a two-step problem. Can you write a question that will make it a two-step problem? Then work the problem and write the answer in the blank after it.

1. Sally went to the store with $2.00. She bought some goods for 75¢, a pattern for 15¢, some ribbon for 18¢, and buttons for 10¢. ________

______________________________?

____

2. We have 48 cookies. We are planning a class party for 20 boys and girls, and want to have 3 cookies apiece. ________

______________________________?

____

3. Jerry bought a set of 15 French stamps for $1.20. His father said, "I could have bought you those stamps for 5¢ apiece." ________

______________________________?

____

4. Allen ordered enlargements of 4 of his best pictures at 35¢ apiece. He paid for them in advance with a five-dollar bill. ________

______________________________?

____

5. In his newest fruit orchard, Don's father has 17 rows of trees with 25 trees in each row. In an older orchard he has 75 trees, and in a third orchard there are 87 trees. ________

______________________________?

____

This page of enrichment material is to be used following page 53.

Arithmetic at School

Miss Camp's class was studying averages. The pupils were surprised to see how many different ways they could use averages. Can you use averages in these ways yourself?

1. This week Linda kept track of the time she spent on arithmetic. Monday, she spent 20 minutes; Tuesday, 42 minutes; Wednesday, 15 minutes; Thursday, 28 minutes; Friday, 35 minutes. How many minutes a day, on the average, did she spend on arithmetic?

____

2. Miss Camp said the arithmetic work was planned to take about half an hour a day, on the average. How near the average did Linda come?

____

3. Last week, the following numbers of pupils in the class were absent: Monday, 5; Tuesday, 2; Wednesday, 4; Thursday, 3; Friday, 1. On the average, how many pupils a day were absent?

____

4. Tom, Bill, Jack, and Larry are doing some special work in science. Last week Tom read 40 pages about animals; Bill read 28 pages; Jack read 35 pages; and Larry read 49 pages. On the average, how many pages of reading did each boy do last week?

____

5. A committee of pupils helps Miss Camp order supplies. The committee wanted to find how many sheets of drawing paper the class used in a week, on the average. For four weeks, they used: 30, 25, 120, and 17 sheets. On the average, how many sheets a week did the class use?

____

If there are 24 pupils in the class, how many sheets per pupil is this?

____

6. Last year there were 31 pupils in Miss Camp's class. They used 279 pencils. On the average, how many pencils per pupil was this?

____

7. The class wants to know the average distance each pupil lives from school. Two pupils live 1 block away, six live 3 blocks away, eight live 4 blocks away, six live 5 blocks away, and two live 7 blocks away. Can you find, on the average, how many blocks away each of the 24 pupils lives? (Suggestion: You have to add the total number of blocks. A short cut is to multiply before you add. Instead of adding $1 + 1 + 3 + 3 + 3 + 3 + 3 + 3$, and so on, how can you start?)

____

This page of enrichment material is to be used following page 54.

A Club Uses Records

Twelve boys belong to a Good Times Club. The boys earn money and put it in the club treasury Then the whole club goes on picnics and trips.

The club keeps careful records of the money. Here are the club records for April.

	1st week	*2nd week*	*3rd week*	*4th week*	*Total*	*Amount Still Needed for Trip*
Tom	75¢	50¢	$1.15	65¢		
Jack	58¢	64¢	1.00	50¢		
Larry	25¢	$1.00	75¢	70¢		
Jim	60¢	40¢	95¢	$1.25		
Frank	80¢	50¢	50¢	95¢		
Jerry	35¢	68¢	75¢	89¢		
Dave	47¢	90¢	75¢	75¢		
Bill	25¢	40¢	60¢	80¢		
Chuck	50¢	80¢	60¢	75¢		
Harry	35¢	75¢	30¢	90¢		
George						
Ben						

1. George put 50¢ a week into the club. Write this in the record.

2. Ben's contributions were 60¢, 49¢, 35¢, and 50¢. Enter them in the record.

3. Find the sum of each boy's contributions for the month.

4. Early in May, the club decided to take a trip to visit some caves. The total cost of the trip was $37.20. How much per boy was this?

____

5. In the "Amount Still Needed for Trip" column, write the amount of extra money each boy had to bring for the trip.

6. Sometimes the club earns extra money as a group. In December, the boys mended and sold old toys. In January they collected old newspapers to sell. In February they sold sandwiches and pop at a basketball game. In March they sold candy bars at the school play.

The boys made the following amounts of money by these activities: December, $8.50; January, $8.52; February, $9.60; March, $9.50.

Make a record of these below and find the total.

December	$8.50
Total	

7. How much money per boy was this?

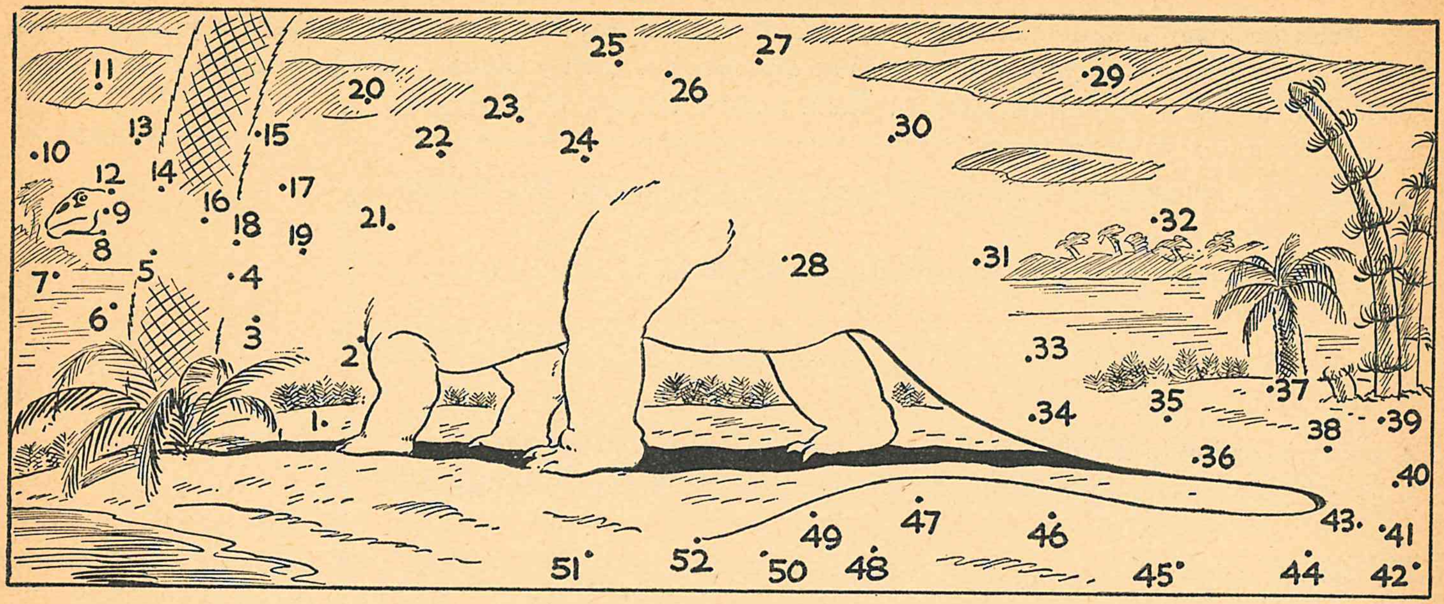
____

8. For their last trip of the year, the boys want to take a steamboat excursion. The cost will be $3.65 per boy. If the club uses the money they made (Problem 6), how much extra money will each boy need for the trip?

____

This page of enrichment material is to be used following page 57.

Something You'll Never See!



If you do this puzzle right, you'll draw a picture of something that once lived, but that **you'll** never see!

Work each of the examples below, selecting the answer you think is right. Draw a line around the **number** before the right answer—Examples **A** and **B** show you how.

Now look at the puzzle. Start at 2, the right answer for Example A. Draw a line to 3, the right answer for Example B.

Continue drawing, going to the correct number in each example in turn. As you see, there are twice as many numbers as you need.

Do you know the name of what you have drawn?

A.	XV × XXV	1. 40	[✓ 2.] 375
B.	Minutes in $\frac{1}{6}$ of an hour	[✓ 3.] 10	4. 20
C.	Average of 90, 20, 60, 42	5. 53	6. 212
D.	49 ÷ 8	7. $5\frac{8}{9}$	8. $6\frac{1}{8}$
E.	52 × 47¢	**9.** $24.44	**10.** $234.40
F.	Number of quarts in 1 bu.	**11.** 16	**12.** 32
G.	Which is larger, $\frac{2}{3}$ or $\frac{5}{6}$?	**13.** $\frac{2}{3}$	**14.** $\frac{5}{6}$
H.	Number of ounces in 3 lb.	**15.** 36	**16.** 48
I.	Number of hours in 1 day	**17.** 12	**18.** 24
J.	1464 ÷ 12	**19.** 122	**20.** 12
K.	Difference between −12° and 54°	**21.** 66°	**22.** 42°
L.	$\frac{1}{4}$ of a gallon	**23.** 1 qt.	**24.** 1 pt.
M.	$\frac{2}{3}$ of a dozen	**25.** 8	**26.** 9

N.	XXXIII + XXIX + XIV	**27.** 76	**28.** 90
O.	$\frac{1}{2}$ yd.	**29.** 1 ft.	**30.** 18 in.
P.	Remainder of 2472 ÷ 57	**31.** 21	**32.** 11
Q.	How many eighths in $\frac{1}{2}$?	**33.** 4	**34.** 2
R.	Seconds in $\frac{2}{3}$ of a minute	**35.** 40	**36.** 45
S.	96 × 124	**37.** 11804	**38.** 11904
T.	Number of feet in 4 yd.	**39.** 9	**40.** 12
U.	3780 ÷ 54	**41.** 70	**42.** 65
V.	XXXVIII − XIX	**43.** XXI	**44.** XIX
W.	lb. in $\frac{1}{2}$ ton	**45.** 1500	**46.** 1000
X.	4356 to the nearest 100	**47.** 4400	**48.** 4300
Y.	Difference between the freezing and boiling points of water	**49.** 180°	**50.** 212°
Z.	876 × 409	**51.** 357284	**52.** 358284

This page of enrichment material is to be used following page 64.

Can You Write the Right Question?

Each problem situation on this page has all the information you need to make a problem with two or more steps. Can you write the final question for each problem? Then solve the problem and write the answer in the blank after it. Each answer should be a **number.**

1. Peggy went to the store with the $5 she got for Christmas. She bought some skating socks for 69¢ and a sweater for $3.50. ______________________

____? ______________

2. Jerry is trying to decide which of two sets of stamps to buy. He can get a set of 15 French stamps for 8¢ apiece, or a set of 10 Dutch stamps for 10¢ apiece. ____

____? ______________

3. Dick is going to build some shelves for his mother. There will be 3 shelves, each 3 ft. long. The two end pieces, of exactly the same kind of lumber, are each 4 ft. long. ______________________________________

____? ______________

4. We can drive to Elwood by way of Charlotte. From where we are to Charlotte is 39 miles, and from Charlotte to Elwood is 27 miles. Or we can go to Elwood by way of Ironton—46 miles to Ironton, 17 miles from Ironton to Elwood. ____

____? ______________

5. Jack's father has a truck that can haul a load of 5 tons. Recently he hauled 9720 lb. of gravel in his truck. ______________________________

____? ______________

6. Bob's class is planning a trip to the city. If the 26 pupils go by train, their round trip fare will be $1.54 per pupil. Or the class can have a school bus take them for a total of $27.75. ______________________________

____? ______________

This page of enrichment material is to be used following page 67.

Make Your Own Graphs

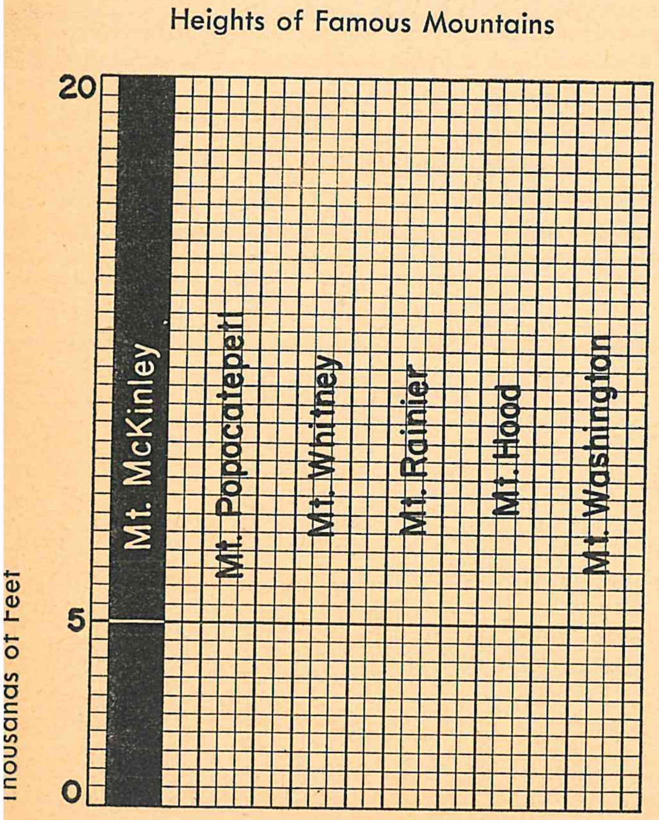
Suppose you are giving a report to the class on some famous mountains in North America. You find the following table.

Mountain	*Height in Feet*	*Height to Nearest Thousand*	*Thousands of Feet*
Mt. McKinley, Alaska	20,300 ft.	20,000 ft.	20
Popocatepetl, Mexico	17,887 ft.		
Mt. Whitney, California	14,495 ft.		
Mt. Rainier, Washington	14,408 ft.		
Mt. Hood, Oregon	11,245 ft.		
Mt. Washington, N. H.	6,288 ft.		

You want to turn these numbers into a simple graph, so that the class can "see" how high the different mountains are.

1. **First**, you notice that the numbers 20,300, and so on, are rather large. Write each one to the nearest thousand. 20,300 to the nearest thousand is 20,000. 17,887 to the nearest thousand is ______. Fill in the second column in the table above.

2. **Second,** write how many thousands there are in each of the numbers you have written. There are 20 thousands in 20,000. These figures go in the last column above.



3. **Third,** make your **scale.** You see that your largest figure is 20. On the graph at the left, how many squares = 1000 ft.? ______ Mark the 10 and 15-thousand-foot lines with a heavy line, as the 5-thousand-foot line is marked.

4. The bar for Mt. McKinley has been drawn for you. Draw each of the other bars up as far as it should go.

To what line will the bar for Popocatepetl go? ______

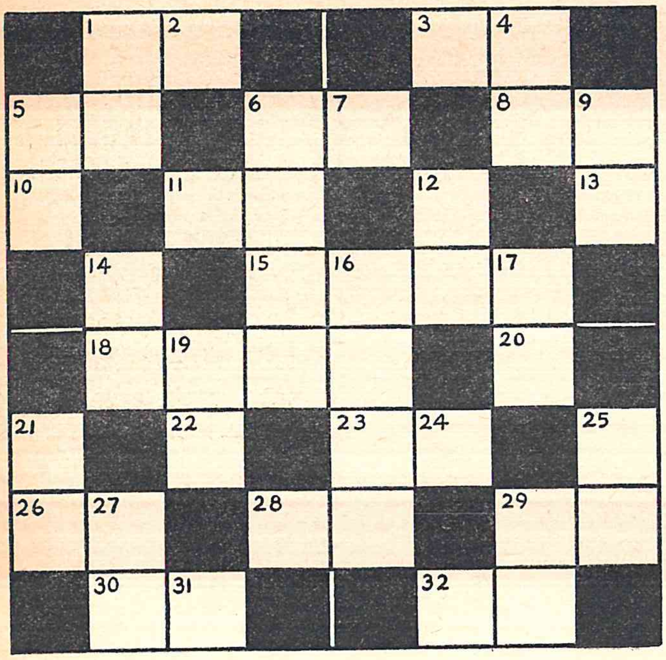
5. How many spaces should the bar for Mt. Hood have? ______ How many spaces above the 10 line is this? ______

6. How many spaces should you have for Mt. Washington? ______ How many spaces beyond the 5 line is this? ______

7. Mt. McKinley is about how many times as high as Mt. Washington? ______

This page of enrichment material is to be used following page 69.

A Cross-Number Puzzle



Here is a cross-number puzzle. You work it just as you would work a crossword puzzle.

First work the examples under **Across**, and write your answers **across** in the puzzle. The numbers in the puzzle tell you where to begin writing each answer.

Then work the examples under **Down**, and check your answers with the puzzle. If your answers don't agree, find your mistake. It may be in the "down" or the "across" example.

Across

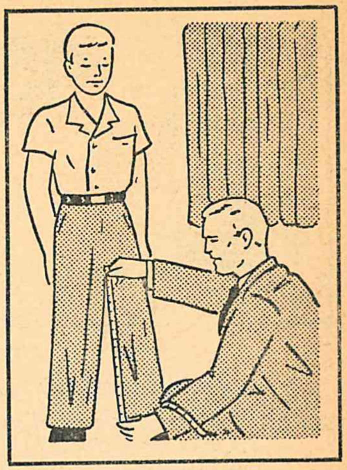
1. 896 ÷ 28
3. 8265 ÷ 87
5. 2464 ÷ 44
6. 3698 ÷ 43
8. 2065 ÷ 35
10. Remainder of 2201 ÷ 43
11. 6216 ÷ 74
12. Remainder of 3876 ÷ 79
13. 768 ÷ 96
14. Remainder of 2261 ÷ 37
15. 157 × 38
18. 249 × 17
20. 322 ÷ 46
21. Remainder of 2047 ÷ 85
22. Remainder of 1226 ÷ 25
23. 4788 ÷ 76
25. 177 ÷ 59
26. 4275 ÷ 57
28. 182 ÷ 14
29. 4992 ÷ 64
30. 8740 ÷ 92
32. 4731 ÷ 57

Down

1. 1044 ÷ 29
2. Remainder of 492 ÷ 35
3. 432 ÷ 48
4. 3685 ÷ 67
5. Remainder of 4708 ÷ 75
6. 356 + 1402 + 5987 + 708
7. 450 ÷ 75
9. 5194 ÷ 53
11. Remainder of 3157 ÷ 47
12. 1064 ÷ 19
14. 3872 ÷ 88
16. 1307 + 502 + 5499 + 2055
17. 4221 ÷ 63
19. 2079 ÷ 99
21. 2156 ÷ 28
24. Remainder of 649 ÷ 19
25. Remainder of 3104 ÷ 42
27. 2832 ÷ 48
28. Remainder of 8373 ÷ 92
29. 4818 ÷ 66
31. Remainder of 2543 ÷ 47
32. 592 ÷ 74

This page of enrichment material is to be used following page 72.

Buying Clothes



1. Recently Tom's mother said, "Tom, you need some new clothes. I saw a sale advertised in the paper tonight. We'll go down to the store tomorrow and see what we can find."

At the store, Tom and his mother found a corduroy jacket. The price tag said \$8.95. The jacket was slightly soiled and was marked $\frac{1}{5}$ off. How much did Tom's mother pay for the jacket?

____

2. They looked at two suits. One was priced \$22.50. The other was \$18.98. What was the difference in price between the two suits?

____

3. Tom and his mother bought the \$18.98 suit. The clerk said "All our suits today are $\frac{1}{10}$ off." To the nearest cent, how much off was this?

____

What did Tom's mother pay for the suit?

____

4. Tom saw some plaid shirts marked \$1.69 apiece, or two for \$3.27. How much did he save by buying two shirts at once instead of at different times?

____

5. Tom's mother saw a sweater for \$2.78, and another for twice as much. How expensive was the second sweater?

____

6. Sue and her mother looked at goods for a dress for Sue. One piece cost 89¢ a yard and another one cost \$1.10 a yard. How much more would a dress of the \$1.10-a-yard material cost, if it takes 4 yards to make Sue a dress? (Choose the easier way to do this problem.)

____

7. Sue bought 3 pairs of socks for \$1.00 instead of 3 pairs for 39¢ a pair. How much did she save?

____

8. A store had some winter coats on sale in the spring, for $\frac{1}{3}$ off. How much would Mrs. Lane save by buying Jean a \$24.42 coat at this sale?

____

9. On a sale, Jean's mother found Jean two blouses at half price. One blouse had been \$1.98 and the other had been \$1.70. What did Jean's mother pay for both?

____

10. Mr. Lane looked at two overcoats. One was priced at \$29.50. Mr. Lane thought he could wear this coat two years. The other coat cost twice as much, but Mr. Lane thought he could wear it for 5 years.

a. How much did the second coat cost?

____

b. How much per year would the cost of the first coat be? (Divide \$29.50 by 2—why?) ________ How much per year would the cost of the second coat be?

____

c. How much **less** per year would the more expensive coat be?

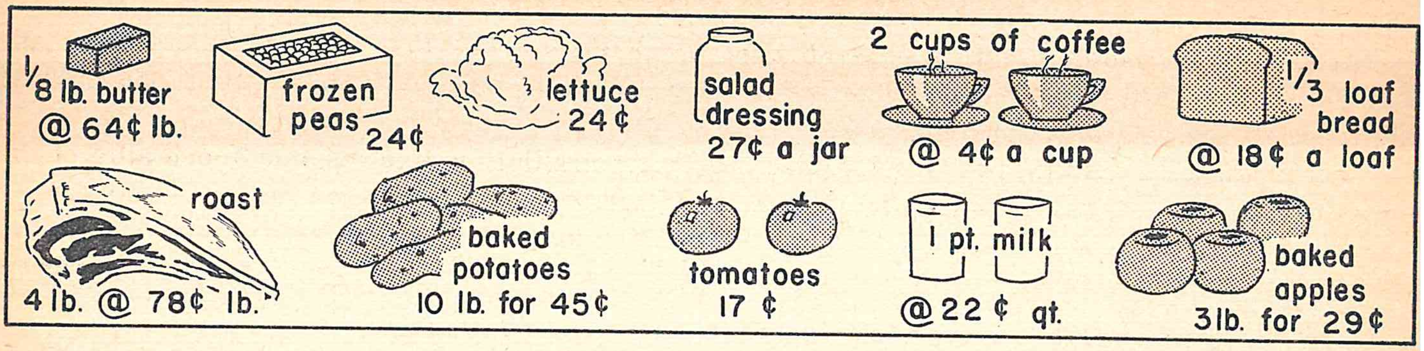
____

d. From the standpoint of money, which priced coat should Mr. Lane buy?

____

This page of enrichment material is to be used following page 74.

How Much Does a Meal Cost?



One evening the Lanes had a dinner that tasted especially good. Mr. Lane said, "I wonder how much this dinner cost us."

"I know how much I paid for the food," Mrs. Lane said. "If Tony and Jean will help, maybe we can count everything up."

All the Lanes got paper and pencils and started to figure. They used the prices shown in the picture above.

1. What was the total cost of the 4-pound roast?

____

Mrs. Lane thought they ate about $\frac{1}{3}$ of the roast for dinner. What would $\frac{1}{3}$ of the roast cost?

____

2. Mrs. Lane thought she cooked about 2 lb. of the potatoes she bought. How much did the potatoes for dinner cost?

____

3. The family ate about $\frac{1}{8}$ lb. butter. If butter costs 64¢ a pound, how much did the butter for dinner cost?

____

4. For their salad, Mrs. Lane used half the head of lettuce, both the tomatoes, and about 5 cents' worth of salad dressing. How much did the salad cost?

____

5. Mrs. Lane used about 1 lb. of apples for her baked apples. To the nearest cent, how much did the apples for dinner cost?

____

6. Mrs. Lane thought the family ate about $\frac{1}{3}$ of a loaf of bread. This was

________ cents more.

7. Tony and Jean drank 1 pt. of milk. How much did the milk cost?

____

8. Mr. and Mrs. Lane each had a cup of coffee at 4¢ a cup. The sugar and cream for the coffee and apples she thought cost about 14¢. How much were these items in all?

____

9. Find the total cost of the dinner:

Meat ________

Potatoes and Peas ________

Salad ________

Bread and Butter ________

Dessert, Beverages,
Cream, and Sugar ________

Total ________

10. If each of the 4 Lanes ate about the same amount, how much per person was this?

____

This page of enrichment material is to be used following page 77.

Choosing the Right Question

Each problem below has two steps. Decide which process the first part of the problem calls for, and write it in the first blank before the problem. Then write a question for the problem using the process called for in the second blank.

For instance, in the first part of Problem 1, you must multiply to find out how much all 4 of the 49-cent stamp packets cost. What question will make the problem an addition one?

Work the problems and write your answers in the blanks after the questions.

__×__ __+__ 1. Jerry bought 4 stamp packets costing 49¢ each and another packet costing 75¢. ____________________

____________________________? __________

____ __÷__ 2. Nancy practiced her piano lesson the following numbers of minutes for 5 days this week: 45, 38, 60, 25, and 42. ____________

____________________________? __________

____ __−__ 3. Twenty pupils can make a bus trip to the city for $25 in all. Train fare would have been $1.85 per pupil. ________________

____________________________? __________

____ __−__ 4. Mrs. Lane bought 6 new breakfast plates costing 69¢ a plate. She gave the clerk a $5 bill. ________________________

____________________________? __________

____ __÷__ 5. At the start of an automobile trip, the Lanes' speedometer read 9,846 miles. At the end of the trip it read 10,454 miles. The Lanes used 32 gallons of gasoline in all. ____________________

____________________________? __________

____ __÷__ 6. A guide took Tony Lane and 5 other boys on a 4-day mountain trip, at $30 a day. The six boys shared the cost equally. ________

____________________________? __________

____ __×__ 7. Last year Bob got about 725 eggs a month from his hens. This year he is averaging 754 eggs a month. ____________________

____________________________? __________

This page of enrichment material is to be used following page 86.

Can You Estimate?

The problems on this page are all one and two-step quickies. See if you can find the easy way to do each one, by choosing the nearest unit of measure or the nearest round number. In Problem 1, 25 eggs are about 2 dozen and 32 hens about 30.

In the first blank below the problem, write the numbers you have rounded off for estimating. Write your estimate of the answer in the second blank.

1. Bob gets an average of 25 eggs a month from each of his 32 hens. About how many dozens of eggs a month does he get?

2 dozen, 30 hens Estimate ________

2. I have $1.98 in my pocket and want to buy a pencil costing 49¢. About how much will I have left?

________________ Estimate ________

3. Joe must practice his trumpet 4 hours this week. He has already practiced 32, 35, and 28 minutes. About how much longer must he practice?

________________ Estimate ________

4. Tom earned $1.87 week before last, $3.06 last week, and $1.15 this week. About how much did he earn a week, on the average?

________________ Estimate ________

5. If Mr. Lane buys half a dozen shirts at a sale price of $1.95, about how much will he spend?

________________ Estimate ________

6. There are 288 pages in Nora's book and she has read 98 of them. About what part of the book has she read?

________________ Estimate ________

7. How much will Mr. Lane have left from a $20 bill if he buys two $4.91 railroad tickets?

________________ Estimate ________

8. Bob was born May 2. His cousin Chuck was born in the same year, but his birthday is October 30. About how many months younger is Chuck than Bob?

________________ Estimate ________

9. Our city has 387,632 people in it. The next largest city in the state has a population of 101,598. About how many times as large is the city we live in?

________________ Estimate ________

10. The earth is about 93 million miles away from the sun. When Saturn is 905 million miles from the sun, it is how many times as far from the sun as we are?

________________ Estimate ________

11. Ellen has a new dress that cost $7.89 and a new hat that cost $3.95. She paid $5.98 for some new shoes. About how much did Ellen's new outfit cost?

________________ Estimate ________

12. The Empire State Building in New York City is 1,250 ft. high. It is about how many times as tall as our city hall, which is 96 ft. high?

________________ Estimate ________

13. Sally is helping to make costumes for a play. One takes 35 inches of trimming, another takes 48 inches, and a third takes only 20 inches. About how many feet of trimming will Sally need?

________________ Estimate ________

This page of enrichment material is to be used following page 89.

Using Fractions Every Day

Just for fun, Jerry kept track of all the times he could use fractions in one day. See if you use fractions in some of these ways.

1. "Get up, Jerry. You have half an hour to dress and eat breakfast before you start for school." How many minutes did Jerry have?

____

2. In Jerry's city, 12 blocks make 1 mile. Jerry lives 4 blocks from school. What part of a mile does he live from school?

____

Some days Jerry comes home for lunch. If he walks both ways, on those days how many miles a day does he walk to and from school?

____

3. There are 28 pupils in Jerry's class. Four pupils were absent. What fraction of the class was absent?

____

What fraction was present? ________

4. In social studies, the class was studying houses. Jerry helped build a model of a house. From a piece of cardboard $\frac{3}{4}$ of a foot long, he cut a piece $\frac{1}{2}$ foot long. What part of a foot was left?

____

How many inches? ________

5. Miss White said, "Jerry, will you order the crackers for our milk this morning? Half the class wants plain crackers and $\frac{3}{8}$ of the class wants graham crackers." If 24 pupils were present, how many envelopes of plain crackers should Jerry order?

____

How many envelopes of graham crackers? (How much is $\frac{1}{8}$ of 24? Then how much is $\frac{3}{8}$ of 24?)

____

What fraction of the class ordered crackers?

____

6. When Jerry went home for lunch, he found his mother had bought half a cake. The half-cake was divided into 4 equal pieces, and 3 of the pieces were eaten for lunch. What fraction of the whole cake was left?

____

7. After school, Jerry went to the store for his mother. He bought $\frac{1}{4}$ lb. butter at 68¢ a pound, $\frac{1}{2}$ lb. meat for the cat at 28¢ a pound, and $\frac{1}{8}$ lb. dried beef at $1.20 a pound. What did Jerry pay for all three things?

____

How heavy a package did he carry home?

____

8. Jerry also mailed 3 little packages for his mother. One weighed $\frac{1}{2}$ lb. and two weighed $\frac{1}{8}$ lb. apiece. What fraction of a pound did all three weigh?

____

How many ounces was this? ________

If Jerry sent them first class, at 3¢ an ounce, how much did he have to pay?

____

9. After dinner, Jerry and his father looked at their stamp albums. One third of Jerry's collection is American stamps and $\frac{1}{6}$ is Canadian stamps. What part of his collection are the American and Canadian stamps together?

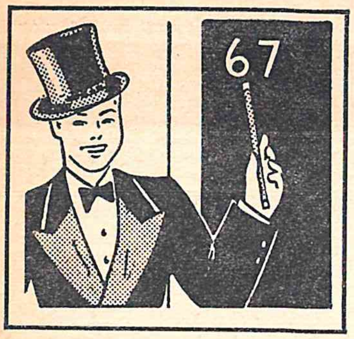
____

10 Jerry's father has $\frac{1}{5}$ American stamps, $\frac{1}{10}$ Canadian stamps, and $\frac{1}{2}$ European stamps. The rest of his collection is stamps from South America. What fraction of his collection are the South American stamps?

____

This page of enrichment material is to be used following page 94.

Do These Number Tricks Work?



Here are two magic number tricks you could use at a party. A good magician, however, always tries out his magic first to be sure it works. Try out each of the tricks below with 4 different numbers. Pick numbers that differ a good deal in size. See if you always get the answer you are supposed to get. If you don't, the trouble may be in your arithmetic!

Trick 1. Say, "Choose any number you like and multiply it by 6. Add 12 and divide by 2. Now subtract 6 and tell me your answer. I'll tell you the number you started with."

The Magic. To get the original number, divide their answer by 3.

Number		Number		Number		Number	
Multiply by	6	Multiply by	6	Multiply by	6	Multiply by	6
Product		Product		Product		Product	
Add	12	Add	12	Add	12	Add	12
Sum		Sum		Sum		Sum	
Divide by 2		Divide by 2		Divide by 2		Divide by 2	
Subtract	6	Subtract	6	Subtract	6	Subtract	6
Answer		Answer		Answer		Answer	
Divide by 3		Divide by 3		Divide by 3		Divide by 3	

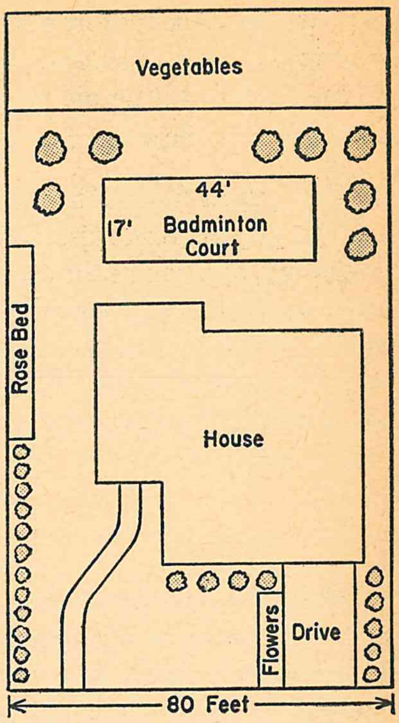
Trick 2. Say, "Write any number you please. Multiply by 2, add 18, and then divide by 2. Now subtract the number you began with, and I'll tell you the answer."

The Magic. The answer is always 9.

Number		Number		Number		Number	
Multiply by	2	Multiply by	2	Multiply by	2	Multiply by	2
Product		Product		Product		Product	
Add	18	Add	18	Add	18	Add	18
Sum		Sum		Sum		Sum	
Divide by 2		Divide by 2		Divide by 2		Divide by 2	
Subtract original no.		Subtract original no.		Subtract original no.		Subtract original no.	
Answer		Answer		Answer		Answer	

This page of enrichment material is to be used following page 98.

The Lanes Buy a House



1. This year, the Lanes bought a new house near the city. The lot their house stands on is 80 ft. wide. Measure the drawing to the right.

If ______ inches = 80 ft., then 1 inch = ______ ft. The **scale** of this drawing is 1 inch = ______ ft.

2. On this scale, how many feet does $\frac{1}{4}$ inch equal? ______

$\frac{1}{8}$ inch? ______ $\frac{1}{2}$ inch? ______

3. Measure the drawing the long way. It is ______ inches long. Therefore the Lanes' lot is ______ ft. deep (that means, goes back ______ ft. from the sidewalk).

4. Measure the vegetable garden at the back. It is ______ inches the long way and ______ inch the short way. The vegetable garden will be ______ ft. by ______ ft. in size.

5. Mr. Lane is thinking of putting a fence around his garden to keep the dogs out. How many feet of fence would he need? ______

6. Tony and Jean are helping their father lay out the badminton court with some string. The court is to be 44′ long and 17′ wide. How much string will they need to go around all four sides? ______ How many yards of string is this? ______

7. Mrs. Lane wants a rose garden. Measure the rose bed at the left of the drawing. It is ______ inch long and ______ inch wide. That means it is to be ______ ft. long and ______ ft. wide.

8. Mrs. Lane also wants a small flower bed along the drive. Measure the flower bed shown in the drawing. The bed will be ______ ft. wide and ______ ft. long.

This page of enrichment material is to be used following page 103.

A Trip to the Museum

We go to school in a small town. Next Saturday, pupils from two classes will make a trip to the city to visit the museum. We want to see how the first white people in this country lived. We want to see models of the old stagecoaches and boats.

We are planning the trip ourselves. See if you can help us solve our problems about it.

1. Ten pupils from Miss Scott's room and 14 pupils from Miss Lang's room are going, and so are the two teachers. Our bus costs $15 for the trip and $7.50 for the driver. How much apiece will we have to pay? (What do you do with the fraction of a cent that is left over?)

2. One of our problems was food. The school cafeteria would make us a box lunch with 2 sandwiches at 10 cents apiece, an apple for 5 cents, cookies for 4 cents, and milk for 6 cents. Or we could have a box lunch with one sandwich at 10 cents, some cake for 6 cents, milk for 6 cents, and a banana for 7 cents. How much less expensive was the second lunch?

3. Ten boys chose the lunch with the 2 sandwiches. The rest of the pupils and the teachers chose the one-sandwich lunch. How much did all our lunches cost together?

4. The trip to the city takes an hour each way. We are planning on another hour for stops and for lunch at a roadside park. We want to spend 2 hours at the museum. To get back to our school at 4 o'clock, we must start

for the city at ______ o'clock. If we eat lunch on the way to the museum,

we will get to the museum at ______

o'clock and leave at ______ o'clock.

5. At the museum, we will first see a movie on early American life. The movie takes three quarters of an hour. Then we divide into small groups and spend 20 minutes at each of 3 exhibits. How much of our museum time will be gone?

6. We are getting ready for the trip through study and reports. In the next 6 school days, each day 3 pupils will make reports on the things we are going to see. If 5 minutes is allowed for each report, how many hours of reports will there be?

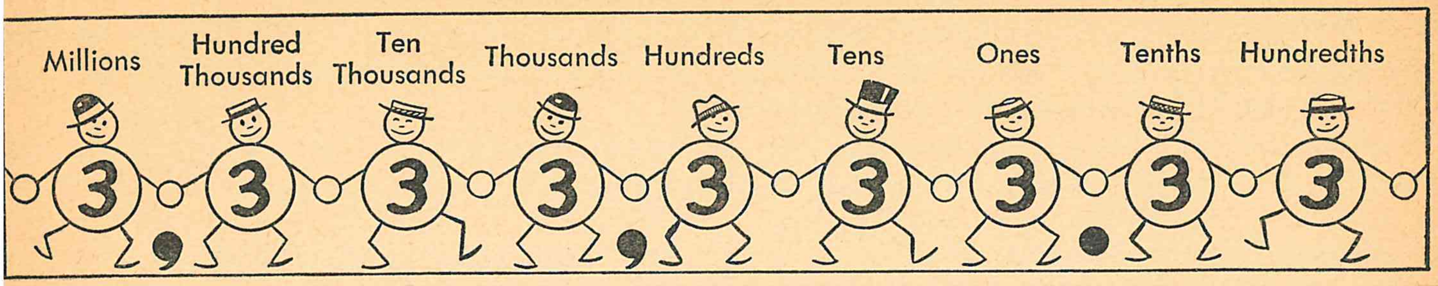
7. It is about 90 miles from New York to Philadelphia. In Colonial times, it often took a man 30 hours on horseback to make this trip. Now, a fast train can make this trip in an hour. The train travels how many times as fast as the horse did?

8. It is about 220 miles from New York to Boston. Suppose a train made the trip at an average speed of 44 miles an hour. How many hours less would it take the train to make the trip than an old-fashioned stagecoach tearing along at an average of 7 miles an hour?

9. It took the *Mayflower*, the ship that brought the Pilgrims to America, 63 days to cross the Atlantic Ocean. A modern ocean liner can make the trip in 5 days. How many **round trips** could a modern liner make while the *Mayflower* made her famous trip?

This page of enrichment material is to be used following page 107.

What Is the Decimal System?



Our Decimal Number System, Showing Place Value in a Number Table

Is there any end to the numbers that exist? No! There is no number so large you can't think of a larger one. There is no number so small you can't write one that is smaller.

The picture above merely shows the part of the number system we use the most. The number system itself just goes on both ways forever.

Men who study the stars need far bigger numbers than any on this page. Men who study atoms need numbers far smaller than the picture shows. But they can easily write these numbers, because of the way our number system is made.

Our system is called the **decimal system,** because it is built on **tens.** See if you can find out how it is put together.

1. How many times as large as 3 is 30? ______ In the number 33, how many tens? ______ How many ones? ______ How many places to the **left** of the 3 ones are the 3 tens written? ______

2. How many times as large as 30 is 300? ______ In the number 330, how many hundreds? ______ How many tens? ______ How many places to the **left** of the 3 tens are the 3 hundreds written? ______

3. 10 × 3 = ______

10 × 30 = ______

10 × 300 = ______

10 × 3000 = ______

10 × 30000 = ______

10 × 300000 = ______

4. In the table you just made, in what direction does the 3 move each time you multiply by 10? ______ How many places does it move each time? ______

5. In our number system, a number directly to the left of another number has a place value ______ times as large as the place value of the other number.

6. Now move **right** in the number table. 30 is how many times as small as 300? ______ 3 is how many times as small as 30? ______

7. What fractional part of 300 is 30? ______ What part of 30 is 3? ______

8. You know that .3 means $\frac{3}{10}$. You know that .03 means $\frac{3}{100}$. If **one** hundredth is 10 times as small as **one** tenth, how many times as small as $\frac{3}{10}$ is $\frac{3}{100}$? ______

9. In our number system, a number directly to the right of another number has a place value only ______ as large as the place value of the other number.

10. What do you think a number 3 places to the **right** of the decimal point would be called?

______

This page of enrichment material is to be used following page 113.

Using Decimals

Decimals are easy to use because they are built right into our number system. You can add and subtract them just as you can any other numbers. You have already multiplied and divided decimals when you multiplied and divided money numbers.

Decimals are often handier than fractions. In the problems below, see if you can handle each fraction as a decimal. Change each fraction to a decimal before you work a problem.

1. George lives $1\frac{3}{4}$ miles from town. Along the same road, but farther away, Sam lives $2\frac{1}{2}$ miles from town. How far is it from Sam's to George's?

2. Don sometimes works for his father. Last week, after school, he helped in the orchard $\frac{1}{2}$ hr., $\frac{3}{4}$ hr., $1\frac{1}{4}$ hr., 1 hr., and $1\frac{1}{2}$ hr. How many hours did Don work in all?

If Don gets 35¢ an hour for this work, how much did he earn last week?

3. Bob sold 5 chickens weighing $4\frac{1}{2}$ lb., $3\frac{1}{4}$ lb., $3\frac{3}{4}$ lb., $5\frac{1}{2}$ lb, and $5\frac{1}{4}$ lb. What was the total weight of the chickens?

Bob got 40¢ a pound for these chickens. How much did he get in all? (Change the decimal in the number of pounds to a fraction before you multiply.)

4. Tom fixed a bucket with a gauge to measure rainfall for the weather study his class is making. Tom thinks that in March $3\frac{1}{4}$ in. of rain fell, in April about $2\frac{3}{4}$ in. fell, and in May, about $2\frac{1}{2}$ in. fell. What was the total rainfall for these three months?

The Weather Bureau figures for these three months were 3.37, 2.93, and 2.18. How many hundredths of an inch off was Tom's homemade gauge?

5. It is $5\frac{1}{2}$ miles from Alford to Quinby, $13\frac{3}{10}$ miles from Quinby to Belltown, $19\frac{1}{5}$ miles from Belltown to Pauling, and $8\frac{9}{10}$ miles from Pauling to Fuller. If Mr. Lane drives from Alford to Fuller by this route, how many miles will he go?

6. Sally and Jean are helping with costumes for a play. Five costumes will take the following yards of material: $3\frac{1}{2}$, $4\frac{1}{4}$, $4\frac{1}{4}$, $3\frac{3}{4}$, and $3\frac{3}{4}$. How many yards of material must the girls buy in all?

If they can get material for 32¢ a yard, how much will their costumes cost?

7. Bill had a friend time him with a stop watch 4 times last week as he ran a race. Then he averaged the times to see about how fast he was running. In finding the average, turn the seconds into fractions of minutes and the fractions into decimals. Then add all the numbers and divide the sum by 4.

Here were Bill's times: 2 minutes 6 seconds, 1 minute 48 seconds, 2 minutes, 2 minutes 6 seconds.

8. Can you think of a shorter way to do Problem 7 above?

This page of enrichment material is to be used following page 113.

Can You Finish These Problems?

These problems are all to have **three steps.** Can you write a question that will make each one a three-step problem? Circle the processes that are to be used, work the problem, and write your answer in the blank.

Sometimes the same process may be used two or even three times. To show this, put **two** or **three** circles around the correct sign.

1. Sally's mother gave her a $5 bill and asked her to go to the grocery. At the store Sally bought 3 cans of peaches at 35¢ a can, some bananas for 42¢, and some meat for 98¢. ______________________________

____?

+ − × ÷ Answer ______________

2. The Lanes started on a two-day automobile trip. When they left home, the speedometer read 10,982.6. At the end of the first day, it read 11,239.3. Their trip will be 567 miles in all. ______________

____?

+ − × ÷ Answer ______________

3. Sam decided to sell all his rabbits. He sold 8 big rabbits for $1.65 apiece, 14 little rabbits for 75¢ apiece, and a pair of fancy rabbits for $5.00. ______________________________________

____?

+ − × ÷ Answer ______________

4. Today, from 8 a.m. to 12 noon, the temperature rose from 48° to 72°. Yesterday, during these same four hours, the temperature rose from 43° to 62°. ______________________________

____?

+ − × ÷ Answer ______________

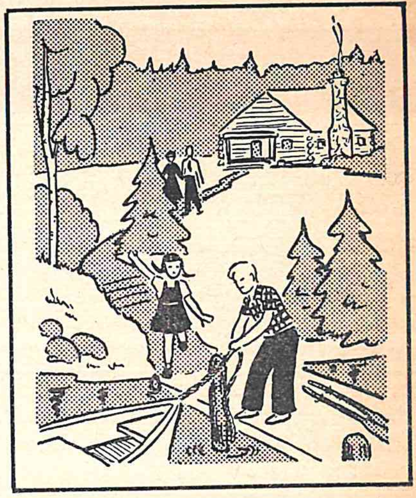
5. Last week, Don worked $1\frac{1}{4}$, $1\frac{1}{2}$, and $\frac{3}{4}$ hours. His father paid him 40¢ an hour. His father also paid Don the $2.40 he had earned by working the week before. ______________________________

____?

+ − × ÷ Answer ______________

This page of enrichment material is to be used following page 119.

Our Family Vacation



1. Our family is planning to take a four-week vacation this summer.

We shall spend $\frac{1}{2}$ the time, or ______ days, at a cottage on a lake. The rest of the time we shall spend on a trip.

2. It is a 234-mile drive to the cottage. Father thinks we can average about 36 miles an hour. How many hours will the trip take us?

______

If we start from home at six o'clock in the morning, and stop an hour for lunch, when should we reach the cottage?

______

3. Our cabin rents for $35 a week. We shall rent a boat for $5 a week. The trip to the lake and back home will cost us about $12 each way. Mother thinks it will cost about $28 a week for food. How much will this part of our vacation cost?

______

There are four in our family. How much per person is this?

______

4. For the other two weeks of our vacation, we are going on a 2000-mile automobile trip. If our car averages 17 miles to a gallon of gasoline, how many gallons of gasoline shall we need? (Figure to the nearest gallon.)

______

5. Father thinks our gasoline will average 25¢ a gallon. He expects to change the oil once, buying 5 quarts at 40¢ a quart. How much should the gasoline and oil for our trip cost us?

______

6. We expect to pay an average of $2 per person for staying overnight. If we are on the road for 13 nights, how much will this cost in all?

______

7. Father is planning on $2.80 a day per person for food. How much should food cost us on this trip?

______

8. How much will food and staying overnight cost a day for all four of us?

______

9. If we drive 2000 miles in 10 days, and drive only about 5 hours a day, how many miles an hour would we have to average?

______

10. Father said we could each take just 25 pounds of baggage on the long trip. My clothes weigh 18 pounds, some hiking boots weigh $3\frac{1}{2}$ pounds, my camera weighs $\frac{3}{4}$ pound, and my raincoat weighs $2\frac{1}{4}$ pounds. How many more pounds of baggage can I take?

______

11. Father gave each of us $5 to spend for souvenirs, postcards, and so on. If I spend half of my $5 for an Indian belt with silver trimmings, and $2 of it for other souvenirs, how many 2-for-a-nickel postcards can I buy with the rest?

______

This page of enrichment material is to be used following page 120.

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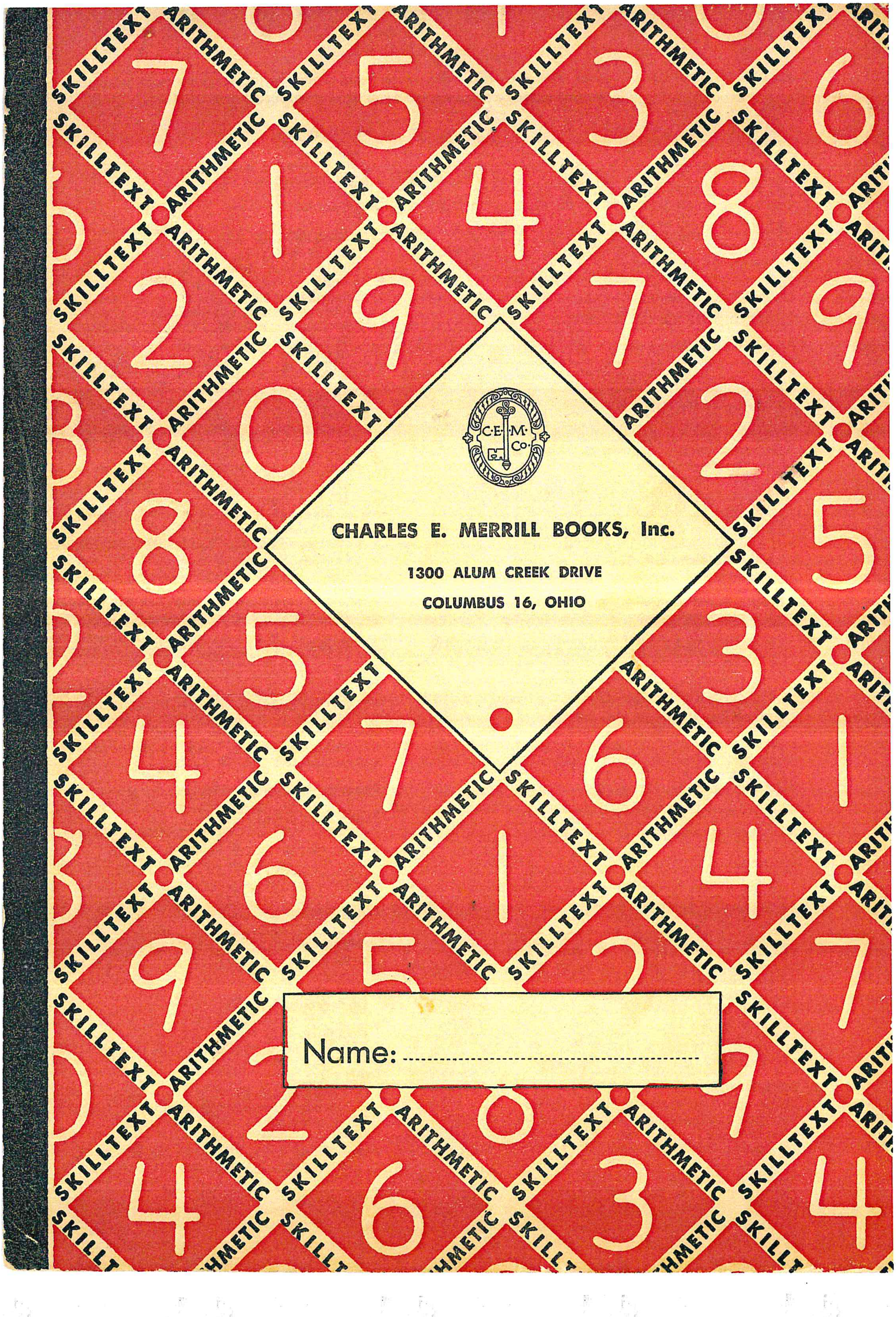

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